

# RAILROAD GAZETTE

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## EDITORIAL ANNOUNCEMENTS.

**THE BRITISH AND EASTERN CONTINENTS** edition of the Railroad Gazette is published each Friday at Queen Anne's Chambers, Westminster, London. It contains selected reading pages from the Railroad Gazette, together with additional British and foreign matter, and is issued under the name Railway Gazette.

**CONTRIBUTIONS.**—Subscribers and others will materially assist in making our news accurate and complete if they will send early information of events which take place under their observation. Discussions of subjects pertaining to all departments of railroad business by men practically acquainted with them are especially desired.

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FRIDAY, OCTOBER 25, 1907.

The annual report of the Treasurer of Yale University just published repeats the story of the bed-rock value of non-speculative railroad securities in the face of and in contrast with any shrinkage of prices in Wall street. The report is very instructive as showing the nature and results of railroad investments very conservative in nature and, at the same time, very varied as to railroad properties and their location. Out of some 200 separate Yale investments in bonds of all classes 138 are in railroads and street railways; and out of 69 stock investments 38 are in railroads. Of the 174 railroad and street railway investments of the two classes, bonds and stocks, practically none are in default as to either interest or dividends. Other features of the report supply evidence in the same line. Out of 269 stock and bond investments of all kinds 174, or nearly 65 per cent., are in railroad and railway stocks and bonds. The sub-groups are not given separately, but the whole group returns 4.82 per cent. income on book value, the bonds, of which 69 per cent. are railroad and railway bonds returning 4.77 per cent. Again the Yale Treasurer refers to his present investment policy as specifically including "railroad bonds and short time notes" and the railroad bonds held rise from \$2,118,384 in the fiscal year 1905-6 to \$2,658,723 at the end of the past fiscal year, or an increase of more than 25 per cent. Yet again, the shrinkage for the fiscal year ending June 30, 1907, is returned by the Yale Treasurer at about 4½ per cent. on the whole group of 269 investments so largely composed of railroad stocks and bonds. There has, of course, been an added contraction since last June, but it can be reckoned at more than equalling the previous contraction and still leave a good relative showing for the conservative railroad investments of a great educational institution in such a period of great market value shrinkage as the present one. The non-default of interest and dividend payments on the 269 Yale investments certifies another familiar fact in terms of high magnitude. It is anomalous that vast shrinkage of capital nowadays should leave incomes unimpaired just as it is anomalous that so few failures should follow in its wake. But both anomalies are cheering and they can hardly persist much longer without bridging the gap completely between the low ebb of railroad values and the upward turn of the fiscal tide.

The paper on Failures of Steel Tires, by George L. Norris, chemist of the Standard Steel Works, read at the October meeting of the Western Railway Club, which is reprinted with illustrations in this issue, is an interesting and exhaustive

study of the causes of failures of steel tires in service. Failures due to inherent defects in the steel from which the tires are made are comparatively few at the present time because of the great advance in the art of special steel making in recent years. Mr. Norris gives in his paper only passing mention of the method of making the blooms from which the tires are rolled, as practiced at the works with which he is connected. As a supplement to the information and photographs contained in his paper as presented, we have incorporated in the article as Figs. 5, 6 and 7, three photographs showing typical fractures obtained in cutting the blooms from the long octagonal ingots into which the molten steel is cast. In order to produce such perfect ingots, the greatest care is exercised in every stage of the process, starting with the melting of the metal in the furnace. Round-end octagonal ingot moulds are used and the ingots are cast from the bottom with the large end up. This allows free escape of the gases. The shape of the ingots and the bottom pouring prevent the formation of fins at the bottom and shrinkage cracks through the body of the metal. These cracks if present would open up during the process of upsetting the bloom under the press preparatory to rolling the tires. In addition to these precautions the ingot moulds are thoroughly heated before pouring to prevent sudden chilling of the molten metal. This assists greatly in getting rid of the usual honey-combing around the edges of the ingot. The ingots, when cold, are made into blooms by cutting partially through with a tool in a lathe and then breaking the remaining metal by driving a wedge in the tool groove. The top is discarded and the remaining portion of the ingot is cut up into from four to six blooms, depending on the size of tire. The three photographs show the uniformly perfect fractures obtained. The metal is free from honey-combing around the edge or blow holes scattered through the interior of the metal. The central pipe shown in the two left-hand sections of Fig. 6 and any excessive segregation is usually entirely cut off with the top discard. Where a small pipe extends into the center of the second piece it is got rid of by punching out the center during the process of manufacture of the tires.

The annual meeting of the Railway Signal Association, reported last week, marks real progress, though the discussions at the convention brought out very little that was new. The principal feature of the meeting, "Exhibit No. 1," of the report made by the special committee, is itself anything but new in its substance; but it is important in what it represents. In deciding to reduce the

number of essential signal indications to sixteen (Numbers 1—3; 5—16, and "C") the committee has done a valuable service; and this service has been done by such competent men, by means of such a thorough discussion in committee, that the report will stand as a permanent landmark. Opposers may succeed in delaying the adoption of the improved practice called for by the report, but the reasonableness of the committee's scheme cannot be controverted. Railroad signaling in America has suffered greatly from a diversity in appliances (and, to a lesser degree, in practice), which probably is inevitable in so large a country; and it is the existence of this diversity, with the need of reducing it, that gives importance to this report. Without resolute action, by a united association, in support of this committee, the notion that there ought to be 30 or 40 signal indications is likely to spread, and to receive support. We do not discuss Exhibit No. 1, for to do so would require several columns of space. The adoption of each item was the result of the most thorough sifting of all possible considerations, and all this will be explained in the circular accompanying the letter ballot. Indeed, the success of the committee's action will depend in large measure on the letter ballot; for to secure the triumph which the report deserves there should be a large, intelligent and enthusiastic vote in both the Railway Signal Association and the American Railway Association; and this will not be possible without a full, detailed and clear explanation of the committee's action, so well prepared that no lukewarm or ill-informed member can miss the point. This point is the necessity of simplifying and making uniform American railroad signaling, and of abolishing all its bad practices. The present report tells definitely what service the railroads want (or should want) their signals to perform. If all or a good majority will promptly agree on this matter, the committee will then proceed to tell how to arrange the signals so as best to fill the want. This was tentatively done in the report made a year ago, but the railroad public was not then educated to the point either of accepting the report or intelligently rejecting it. Now, with the present report, the subject can be taken up again, with more promise of progress.

In its statement of the "Basis of System," on the first page of the report, this committee has distinctly cleared the air. Every signal engineer should study every line of these half dozen paragraphs, if not for the correction of errors in his own mind, for the strengthening of his power to denounce error in others. For the reason given above, we do not here discuss the whole of the report; but this point, and the recognition of the single switch light, under "Explanation of Action," deserve special mention. Having set out to prescribe a perfectly consistent system, the members of the committee were under strong temptation, no doubt, to contrive something new, or at least, different, for the indication at an isolated switch; but they dared to be (superficially) inconsistent, thus promoting simplicity and economy. It is to be hoped that next year, in their recommendations, they will go further and prescribe for such switches a simple and rational target—say one of the simplest and most old-fashioned of those described in the *Railroad Gazette*, January 12, 1906—and also a limit for the height of both target and light. Switch lights can be sufficiently differentiated from semaphore lights by height alone.—The action of the Milwaukee meeting in spending a whole day on a code of specifications has once more shown how profitless it is to try to do committee work in such a large meeting. If a committee makes a poor report on such a subject—detailed specifications—the only remedy is to get a better committee, and wait another year. But in this case it was not a poor report. Many items were unacceptable to some of the members, and very likely justly so; but it is not the function of a new set of specifications to prescribe exactly what a certain engineer will desire to say in a certain place or on a certain branch of his subject. The most that a committee can do is to prescribe a form, taking care to mention every point that any user is liable to desire to insert in a contract, and in disputed or doubtful matters to draft such a paragraph as a majority will want. If the committee cannot make a satisfactory guess concerning the wishes of the majority it can give alternative readings, or it can leave blanks. To use blank spaces would be the only way to satisfy some of the critics who spoke at Milwaukee; and probably that is the method that the committee will adopt in making some of its corrections; but it is to be borne in mind that a blank but poorly fulfils its function unless the committee tells very fully just what it believes ought to be put into the blank space. A main object in this work is uniformity, and every

blank space offers a chance for unnecessary (as well as necessary) diversity. The true course with new specifications which are accused of being crude is that which has been taken by this Association with the insulated wire code—use temporarily the best that can be had, and keep a committee on the watch to introduce improvements when practicable.

### RAIL CORRUGATIONS.

For a number of years a great deal of trouble has been experienced by street railway companies, from the corrugating of the upper face of the rail head. Innumerable theories have been advanced to account for this peculiarity, but very little in the way of real investigation has been done. Corrugating is not a peculiarity of street roads, for it is to be found on some steam lines, and has been particularly troublesome in India, but it is upon these street roads that it occurs to the greatest extent and has attracted the most attention. In fact, it has become, in some cases, a very serious item of expense. Much of the trouble has been attributed to the condition of the metal forming the rail, but there does not seem to be one atom of evidence to prove that the metal of the rail itself, or the method of its manipulation at the mill, has anything whatever to do with it. At the recent meeting of the American Street & Interurban Railway Engineering Association, held at Atlantic City, a report was rendered by a committee appointed to look into the subject of rail corrugations, in which the trouble is attributed to a vibration set up by the loading of the rail, and remedies are suggested which are claimed to have been effective. The report gives, in detail, the answers to the questions that were issued as a circular, and then the conclusions are drawn on the basis that the primary cause of corrugations is vibration, either in the rails or in the entire track structure. So that they may arise from any one of four causes: the vibration or lateral bending of the web of the rail itself; the rails being loose on their supports; the ties being loose on their foundations and the vibration or movement of the foundations immediately under the track structure. Which one of these defects or conditions caused the corrugations, can be ascertained by an inspection of the head of the rail. Each condition produces corrugations of a different character, not only in length and form, but also with certain other peculiarities difficult of explanation without referring to a case in point.

The reason given why these corrugations do not appear on steam roads, if they are due to vibrations, is that the comparatively loose rail is forced ahead by the great weight of the locomotive in the well-known long wave, and that there is very little slipping of the wheels of the trailer cars. In cases where trouble has been experienced on foreign roads, it has been found that, in almost every case, the rails have been held in chairs or were provided with some form of a cushion, and the probability is that there is a slight movement between the rail and its supports.

In the cases of street rails that were reported to be free from corrugations and yet were very loose, it has been found that the corrugations really existed, but the distances between crowns, or the pitch was so great that they were not perceptible under the conditions of ordinary inspection.

By measuring the amount of bending or buckling in the web of the rail it has been found, in some cases, to be as much as  $\frac{3}{16}$  in.

It has been noted by some roads that corrugations were appearing on rails laid on a concrete base, but in every case that has come to notice the rails had been temporarily supported by wooden ties, concrete being tamped under the base of the rail between the ties with no provision made for taking up the shrinkage, which always takes place during the settling and drying of the concrete.

In many cases where track is constructed in this manner the rails seldom have a continuous or uniform support, by reason of their not having anchorages or holding-down devices other than spikes in the ties, spaced at long intervals. This results in a slight movement of the rail on its foundation, and soon causes corrugations to appear, although quite frequently where light rail is used the trouble comes from the bending or buckling of the web of the rail, as noted above.

In concrete road-bed construction, it seems absolutely necessary to provide some means of drawing the rail down on its bed, thereby taking up the shrinkage and preventing any liability of the rail moving on its foundation. In this class of construction, vibration can be prevented only by providing a rail of the proper design and an absolutely uniform and continuous support.

When the trouble in the construction is found to have been



caused by loose rails or ties, the only remedy is to grind or file the head of the rails, and to immediately follow this work by firmly securing the rails to the ties and by tamping, using a coarse gravel wherever the foundation is found to consist of soft or spongy material.

Corrugations in light rails, due to the bending of the thin web, are difficult to remedy without considerable expense, but after the heads have been filed to a comparatively smooth surface, it has been found that setting the track to a slightly wide gage will sometimes prevent a recurrence of the defect.

That there is something in this bending of the web of the rail to account for this corrugation is shown by the fact that about two years ago steps were taken to obviate the trouble by increasing the thickness of the web of the rails on one road to  $\frac{3}{16}$  in. By this means the corrugation has been reduced on a system of 600 miles to a very small percentage. It is added in conclusion, that the price of this immunity is eternal vigilance, and the expenditure of considerable sums of money when any form of wooden support is used.

### STILL BETTER BRAKES.

A third terrible fatal derailment within a recent period, and caused by failure to check the speed of the train on a curving approach to a dangerous curve, has happened in England under circumstances which suggest some general lessons, both there and here, in the value of the quickest acting brakes.

In July, 1906, at Salisbury, a train at high speed was derailed on a sharp curve where the speed limit was 15 miles per hour, killing 28 persons. In September, 1906, at Grantham, a train at high speed was derailed on a sharp curve where the speed limit was 15 miles per hour, killing 14 persons. On October 15, 1907, at Shrewsbury, a train at high speed was derailed on a sharp curve where the speed limit was 10 miles per hour, killing 16 persons. In each case, either the vacuum brake failed to work at the critical time, or three persons, the driver, fireman and guard, failed to do their duty. One physical condition is alike in the three cases, namely: In nearing each of these three dangerous curves the driver normally begins to check from high speed while the train is passing through a curve.

It has been demonstrated and published that the older forms of vacuum brake ball-valve, still largely in use, are liable to erratic action. This is, in brief, the discovery that the ball can, under certain circumstances, be so displaced as to allow the air to be slowly admitted to the vacuum chamber above the piston, and thereby impair or lose the efficiency of the brake. The governing circumstances are that the train needs to be moving at high speed, and that the brakes be applied, and released, to slightly check speed while on a curve with sufficiently short radius so that centrifugal force prevents the return of the ball to its valve seat, and causes the brake to be temporarily inoperative. At Salisbury and Grantham the drivers and firemen were instantly killed and, lacking their evidence, we can only incline to the belief that these accidents were due to a dangerous form of brake valve. If no other explanation is found for the similar derailment at Shrewsbury it will be cumulative evidence of mechanical defect.

It seems to be clear that the original failure of the British companies, in the seventies, to adopt a standard, either compressed air or vacuum, for braking trains has so divided the business that there has been a lack of incentive to invention and application of improved brakes. In the vacuum brake, with the exception of an automatic feature, the improvements have been comparatively slight.

The history of the air brake in this country has been marked by four epochs, and we are now apparently entering on a fifth stage. There has been a successive adoption for passenger service of four distinct forms, each better than the other, and made standard as rapidly as the efficiency of the later form over that of its predecessor was adequately demonstrated. The fifth and the latest improvement gives an increased emergency efficiency of from 15 to 20 per cent. In connection with a supplemental air supply and a graduated release feature, it reduces to a minimum the existing small chance of brake failure due to incompetent handling. While this is not yet in the "adequately demonstrated" group to the extent that demands its wholesale adoption, nevertheless it has been applied to the electric equipment of the New York Central, Pennsylvania, Long Island and other roads and made standard on the Atchison. Judging by the past, it is sure to receive such consideration as its merits warrant, and this ready attitude is fully justified by a study of the results of accidents. In all the 159 principal accidents reported on

by the Interstate Commerce Commission for the last year, brake efficiency was a marked factor, and in so far as the percentage of that efficiency can be increased there will be a lessening of the serious results.

### Train Accidents in September.<sup>1</sup>

Our record of train accidents occurring on the railroads of the United States in September includes 18 collisions, 24 derailments and two boiler explosions, 44 accidents in all. This record is not published in full except in the cases of the few accidents which are especially prominent—in the present instance six collisions and four derailments. The record of "ordinary" accidents—which term includes, for our present purpose, only those which result in fatal injury to a passenger or an employee or which are of special interest to operating officers—is given at the end in the shape of a one-line item for each accident, showing date, location, class, and number of deaths and injuries. In this tabular statement the italics indicate items which are explained in detail. This record is based on accounts published in local daily newspapers, except in the cases of accidents of such magnitude that it seems proper to send a letter of inquiry to the railroad manager.

The month of September had four train accidents which may be called of first magnitude; the collision at West Canaan, N. H., on the 16th; the derailment at Norris, Iowa, on the 6th; the collision near Bellaire, Ohio, on the 28th, and one at Tehachapi, Cal., on the 26th. The New Hampshire collision, due to an error in the train number in a despatcher's order, was reported in the *Railroad Gazette* of the 20th. The railroad commissioners of the state have investigated the case and they think that the weight of evidence is against the despatcher who, it is believed, put the cipher into the order, in place of the figure 4, which should have been put there, because a previous order relating to train No. 30 was before him when he was carrying out this operation. It does not appear that the commissioners unequivocally condemn the despatcher, though they exonerate Greeley, the station operator, from all blame. The only recommendation in the report is that the despatcher at Concord should not be required to go downstairs to deliver train orders, as he is liable to have to do during a few hours on Sunday morning.

The derailment at Norris, Iowa, on the 6th occurred nearly opposite the station. It caused the death of 13 passengers and the injury of six; one employee was killed and five injured. The passengers killed and injured were all in the smoker, which is said to have been a strong car, in first class condition. The passenger train was running at regular speed. A freight train was standing on the side track, and the trucks of the tender of the passenger engine, supposedly derailed several hundred feet west of the switch, when they struck the switch caused the passenger engine to turn over against the freight engine, badly damaging both. The mail car, baggage car and smoker were demolished. No defect was discovered in cars, engine or track, which would have caused the derailment.

In the collision near Bellaire, Ohio, on the 28th, six passengers, three employees and one other person were killed and 20 passengers and two employees were injured. In this collision, occurring at 2.40 p.m., an eastbound express train ran over a misplaced switch and collided with a freight train which was moving on the west-bound main track. The engines of both trains were wrecked, and the smoking car was telescoped by the baggage car so that every seat was demolished. Every person in this car was either killed or injured. The collision is charged to the forgetfulness of a telegraph operator who had neglected to change the switch.

The collision near Tehachapi, Cal., on the 26th, caused the death of eight Greek laborers and the injury of 20, a work train being run into by a freight near the entrance to a tunnel. It is said that the comrades of the victims attacked the trainmen after the collision, so that a force of armed men was sent to protect the trainmen.

The collision at Dillard, Ore., on the night of the 12th was a case of a freight train entering a side track not under proper control. It collided with and damaged five work train cars occupied

#### <sup>1</sup>Abbreviations and marks used in Accident List:

- rc.....Rear collision.
- bc.....Butting collision.
- xc.....Other collisions; as at crossings or in yards. Where only one train is mentioned, it is usually a case of a train running into a standing car or cars, or a collision due to a train breaking in two on a descending grade.
- b.....Broken.
- d.....Defective.
- dr.....Defect of roadway.
- eq.....Defect in car or engine.
- n.....Negligence.
- unf.....Unforeseen obstruction.
- unx.....Unexplained.
- derail.....Open derailing switch (negligence of engineman or signalman).
- ms.....Misplaced switch.
- acc.obst.....Accidental obstruction.
- malice.....Malicious obstruction of track or misplacement of switch.
- boiler.....Explosion of boiler of locomotive on road.
- fire.....Cars burned while running.
- pass.....Passenger train.
- ft.....Freight train (includes empty, engines, work trains, etc.).
- \*Wreck wholly or partly destroyed by fire.
- +One or more passengers killed.

by laborers, standing on the side track. Five laborers were killed and five seriously injured. Of the killed, three were burned to death, the wreck having taken fire immediately from stoves in the outfit cars upset by the collision.

The collision at Allington, Conn., on the 15th, resembles that which occurred at Pittsford, N. Y., in June, in that the engineman is said to have forgotten a regular train which runs only once a week. In this case it was a Sunday train; in the Pittsford case it was a train scheduled to run only two days in the week.

The collision at Devore, Cal., on the 21st, was due to a long freight train becoming uncontrollable while on a steep descending grade. It collided with an empty engine at the foot of the grade and the wreck was mostly destroyed by a fire which broke out immediately.

The derailment near Kanawha Falls, W. Va., on the 2d, causing five deaths, was due to a broken rail. Three cars were overturned and fell down a bank. The rail was one weighing 100 lbs. per yard, made in 1898, but it had an interior defect which could not have been discovered by a surface inspection.

The derailments near New Florence, Pa., on the 15th, which were on the West Penn division of the Pennsylvania, are remarkable only because they were both caused by the same wheel failure; that of the flange of a wheel in one of the trains. The two trains were running in the same direction on parallel tracks, and the second derailment, which is classed as due to accidental obstruction, was caused by parts of the wreck of the first train which fell under the cars of the second.

In three derailments in this month the first vehicle to jump the track was the tender, and in two of these cases the engine was running backward. These three are in addition to those mentioned above, but in one of the above (Norris) it is thought that the tender was the first to leave the track.

#### TRAIN ACCIDENTS IN THE UNITED STATES IN SEPTEMBER, 1907.

Collisions.			Kind of		No. persons	
Date.	Road.	Place.	Accident.	Train.	Kil'd.	Inj'd.
1.	Grand Trunk	Royal Oak.	rc.	P. & Ft.	0	2
*3.	Southern	Concord.	xc.	P. & P.	0	5
3.	Southern	Chattanooga.	rc.	P. & Ft.	0	5
3.	Texas & Pacific	Annetta.	bc.	P. & P.	0	2
6.	N. Y., N. H. & H.	Botsford.	xc.	P. & Ft.	1	0
7.	St. L. & San Fran.	Denison.	bc.	P. & P.	0	5
8.	L. S. & M. S.	Cleveland.	bc.	Ft. & Ft.	1	0
*12.	Southern Pacific	Dillard, Ore.	rc.	Ft. & Ft.	5	5
13.	D. L. & W. N. Y. S. & W.	Hoboken.	xc.	P. & P.	0	4
14.	H. B. & W. Tex.	Houston.	bc.	Ft. & P.	1	2
15.	N. Y., N. H. & H.	Allington.	bc.	P. & P.	1	12
16.	Boston & Maine	W. Canaan.	bc.	P. & Ft.	25	26
*21.	Atch., Top. & S. Fe.	Devore.	xc.	Ft. & Ft.	6	0
23.	Mo., Kan. & Texas	Evansville.	bc.	Ft. & Ft.	4	0
26.	Southern Pacific	Tehachapi.	xc.	Ft. & Ft.	8	20
†28.	Balt. & Ohio	Bellaire.	xc.	P. & Ft.	10	22
29.	Seaboard	Alamo.	xc.	Ft. & Ft.	4	0
29.	St. L. & San Fran.	Stanton.	bc.	P. & Ft.	8	20
Derailments.			Kind of		No. persons	
Date.	Road.	Place.	Kind of train.	Cause of dermt.	Kil'd.	Inj'd.
1.	Iowa Central	New Sharon.	Pass.	ms.	1	2
†2.	Ches. & Ohio	Kanawha Falls.	Pass.	b. rail.	5	9
3.	San An. & A. Pass.	Shavano.	Ft.	unx.	1	1
3.	Southern	Concord.	Pass.	unx.	0	4
4.	Mo., Kan. & Texas	Myra.	Ft.	loose rail.	1	1
4.	Balt. & Ohio	Suterville.	Ft.	mal.	0	0
4.	P. W. & D.	Tolbert.	Pass.	loose rail.	0	18
†6.	Chic., R. I. & Pac.	Norris.	Pass.	unx.	14	11
6.	Seaboard Air Line	McRae.	Pass.	unx.	0	7
7.	Chic., R. I. & Pac.	Caldwell.	Pass.	neg.	2	0
8.	Pennsylvania	Church Hill.	Pass.	unx.	0	1
8.	El Paso & S. W.	Escondido.	Pass.	beam.	0	0
9.	Texas & Pacific	Arlington.	Ft.	unx.	1	4
11.	C. N. E.	Lloyds.	Ft.	unx.	1	0
15.	Pennsylvania	New Florence.	Ft.	{ flange. }	1	3
15.	Pennsylvania	New Florence.	Ft.	{ acc. obst. }	1	3
17.	Denver & Rio Grande.	Pando.	Ft.	runaway.	3	0
17.	Lehigh Valley	Pattenburg.	Pass.	b. rail.	0	2
*19.	Great Northern	Wenatchee.	Pass.	unx.	0	1
21.	Illinois Central	Fulton.	Pass.	unx.	3	0
*22.	Southern	Ryan.	Pass.	b. rail.	0	32
22.	Pennsylvania	Burton City.	Ft.	bolter.	4	0
27.	Pennsylvania	Duncannon.	Ft.	hose.	0	12
*30.	St. L. & San Fran.	Dixon.	Pass.	unx.	2	1
Other Accidents.			Kind of		No. persons	
Date.	Road.	Place.	Accident.	Train.	Kil'd.	Inj'd.
17.	Chic., R. I. & Pac.	Ramah.	Pass.	bolter.	2	0
16.	Balt. & Ohio	Lorain.	Ft.	bolter.	1	2

Of the 12 serious electric car accidents reported in the newspapers in September, five resulted in one or more fatalities, namely, Schenectady, Chicago (South Side Elevated), Nazareth, Pa.; Toledo, Ohio; Elmore, Ohio.

The Interstate Commerce Commission has issued an interesting decision concerning the collection of demurrage for the detention of freight cars while on private side tracks. The opinion, by Commissioner Prouty, is in the case of the Cudahy Packing Company against the Chicago & North-Western. The complainant owns a warehouse at Deadwood, S. Dak., situated on a spur track built and maintained at the expense of the railroad. Demurrage at one dollar a day is charged if cars are not unloaded within 48 hours. The complainant desires to retain its cars upon this spur track both before and after they are unloaded for an indefinite time without payment of demurrage charges. The Commission holds that the fact that the defendant had constructed and maintained entirely at its own expense the spur track for the exclusive use of

the complainant, would be no reason why the complainant should be relieved from the payment of these charges which are imposed upon the rest of the public. The construction and maintenance of this track is rather in the nature of a gift to the complainant and certainly could not be made the basis of any exception in its favor; and the question is in no way affected by the fact that the cars are owned by the complainant. This is as it should be, of course. The Commission, indeed, might justly have gone farther and have declared that the same rule would apply even if Cudahy had owned the track. The North-Western has the usual rule that if the consignee owns both car and track no demurrage shall be charged; but that rule is justified rather by expediency than by economy and justice. In this case the packer evidently desired to treat the side track as though he owned it. And well he might; for the company had about the same as given it to him. The owner of private cars may take them out of service whenever he pleases, unless he has agreed to keep them in service; but it is not a strained construction of the arrangement between the owner and the railroad to hold that such cars shall share with other similar cars the burden of keeping the general traffic moving; even perhaps to the extent of being used for some other shipper's goods if the owner has no immediate need of the cars. More important than this consideration, however, is the convenient use of the track. Demurrage is not charged solely as rent on cars, nor for rent and track room combined; but also for the purpose of facilitating switching and the promotion of prompt movement of freight generally. If a packing company desires to hold its cars out of service it should at least provide for them a track where they would not inconvenience the railroad switching crews in their handling of other cars. Demurrage collections must be managed under rather loose rules, at best; but this decision ought to suggest to the railroads that they abandon, so far as abandonment may be in the interest of economy, their rule exempting owners' cars on owners' tracks. If a railroad hires a car and pays for its use it should have the right to use it as its own car.

#### Erie Railroad.

The Erie is a railroad company on which the depression in the security market has fallen with particular severity. A year ago plans were authorized and work begun on making over the property into an efficient trunk line railroad. A new through line was to take the place of 70 of the first 89 miles westward out of Jersey City and new cut-offs were to be built further west. As a result of these improvements and others by which they were to be followed, grades and curvature, now severe, were to be greatly reduced all the way between New York and Chicago, with the intention of eventually getting a maximum grade of 0.3 of 1 per cent. both east- and westbound between Chicago and Port Jervis, and with the exception of one pusher grade, a ruling gradient of 0.2 of 1 per cent. east- and 0.6 of 1 per cent. westbound between Port Jervis and Jersey City. The Jersey City terminals were to be rearranged, enlarged and electrified, this improvement including an open cut four tracks wide through Bergen Hill, the narrow throat which lies just west of the passenger and fast freight terminal, whose double-track tunnel had for some time been insufficient. Work had been actively begun on several of these projects and it looked as though the time was within measurable distance when the Erie, freed from the handicaps of the mistakes of the past as reflected in the physical needs of the property, would be able, through greatly increased earnings, to overcome even the great financial mistakes of its past history—a result which was almost absolutely certain to come about if a thorough improvement policy could be carried out.

The Erie has had to depend on issues of bonds convertible into common stock, to finance the cost of its improvements. Up to June 30, 1906, \$22,000,000 of these bonds were sold, while Erie common stock was selling around 45. With Erie common selling at below 20, as it does to-day, the convertible feature of such bonds is of small value and there is no market for them. Even before the stock market crash of last March the company, in the fall of 1906, with work actively under way on at least three of the new construction projects, found itself in need of ready money. Short term notes were issued. The report gives no facts about the note issues of the year and the information made public at the time was not always definite or final, so that it is not possible to give with certainty the exact amounts put out. According to the *Railroad Gazette's* record, however, between October 1, 1906, and January 3, 1907, \$7,000,000 six-months 6 per cent. notes were sold at prices near par.

Then came the great decline in security prices. There fell due on April 8 \$3,000,000 notes, and the Erie was for the moment in a tight place. These were refunded by \$5,500,000 one-year credit notes which instead of being interest-bearing were discounted by the bankers like commercial paper. This is a more expensive process for the seller. At the price of about 90, at which the notes were reported to have been sold, the cost of the money to the Erie was 10 or 11 per cent., a prohibitive rate for railroad borrowings. The funds



thus obtained were all needed to meet notes which were falling due. Improvement work had been stopped in March. The most important of this was what is known as the Guymard cut-off, from Highland Mills, N. Y., west via Campbell Hall to Guymard, which is the station east of Port Jervis. This new 40-mile line was to take the place of a stretch of road with heavy grades and curvature. There was also a cut-off between Hunts, on the Hornell-Buffalo line, and Cuba, on the main line west of Hornell, on which work was suspended. These were the two pieces of work on which most had been done.

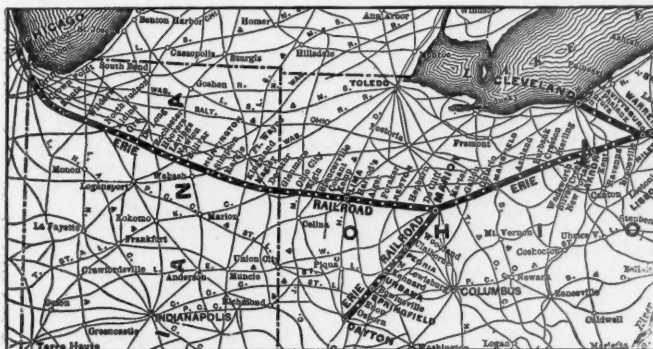
Before many weeks the situation brightened. Late in May the Erie borrowed \$5,000,000 more on one-year notes, but on better terms than received for the notes sold in April. The two new cut-offs on which work had been stopped had been incorporated as separate railroads, the Guymard cut-off being the Erie & Jersey Railroad and the cut-off from the Buffalo division to the main line being the Genesee River Railroad. The Erie & Jersey issued first mortgage bonds and in June the Erie sold \$3,000,000 three-year 6 per cent. notes secured by \$4,000,000 Erie & Jersey bonds. In the same month the Genesee River was authorized to issue \$6,000,000 first mortgage bonds and the Erie negotiated a loan of \$2,000,000 secured by part of these bonds. Thus funds were provided for the immediate needs of the Erie and for carrying on the most important of the construction work which had already been begun.

Then came the question, how, looking toward the future, to further finance the improvements? The short term notes had been issued at high cost to provide funds immediately and absolutely necessary. This form of financing was too expensive to be followed except under compulsion. As there was no general improvement in the security market nor any prospect of one, it was not possible to sell bonds. There was, however, a source from which funds might be obtained—the surplus earnings. For the year ended June 30, 1907, there were \$2,555,696 disbursed in dividends, \$1,642,029 spent for additions and improvements and a little more than \$1,700,000 left as the final surplus of the year, a sum entirely inadequate to cover the needs of the road which would normally be met by new security issues on capital account. It was possible, however, to temporarily increase the amount of cash thus available by passing

did not increase as fast as might have been feared. Gross earnings from railroad and other operations, not including coal companies, were \$53,900,000, against \$50,000,000 in 1906, an increase of \$3,900,000, or 8 per cent. Railroad gross earnings increased \$3,700,000, which is in the same proportion. Railroad operating expenses were \$1,900,000, or 6 per cent. larger than in the previous year, while net railroad earnings were \$16,171,357, an increase of 12 per cent. over the previous year. The expenses of "other operations" were larger than the earnings, so that the net earnings from all operations were \$15,747,788, against \$14,129,797 in 1906. The railroad operating ratio was 68.12 per cent., against 69.71 per cent. in 1906.

This reduction in the operating ratio is a fortunate and unusual result in a year when the expenses of operation generally greatly increased. It was brought about partly by a reduction of 6 per cent. in the cost of maintaining the equipment. This decrease came mostly in locomotive repairs, where such a showing was not unnatural following a year in which 173 new locomotives, of which 118 were additions, were added to the equipment. In 1907 with four new locomotives received there was a decrease of 26 in the number of locomotives. The retiring of these 30 old locomotives from the equipment also helps to explain the decrease in the cost of locomotive repairs. Repairs and renewals cost \$2,291 per locomotive, against \$2,954 in 1906; \$612 per passenger car, against \$618 in 1906, and \$69 per freight car, against \$60 in 1906. Maintenance of way cost \$2,346 per mile of line operated, against \$2,139 in 1906. It therefore appears that the reduction in the Erie's operating ratio was not gained at the expense of maintenance.

Conducting transportation increased \$1,530,000, or 9 per cent., against an increase of \$479,000, or 11 per cent., in maintenance of

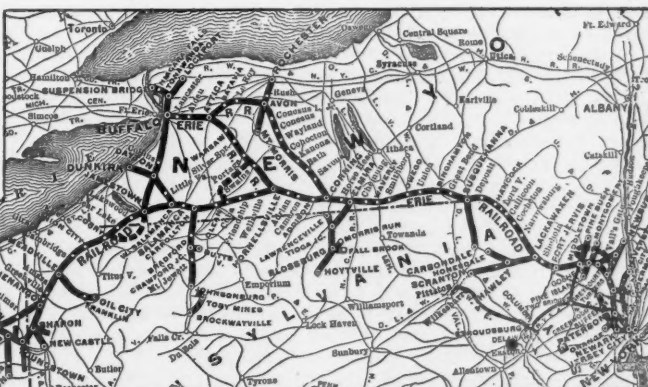


Erie Railroad.

the dividend payments. This, however, was a more extreme step than the directors thought necessary to take.

The expedient was adopted, as announced last August, of paying the dividends in scrip payable in 10 years with interest meanwhile at 4 per cent. This operation has been described as a forced loan from stockholders at 4 per cent., at a time when the Erie was paying 6 per cent. and over for money borrowed from other sources. In a sense this is true but it does not tell the whole story. It was within the power of the directors to pass the dividends altogether; in which case the stockholders would have had nothing at all for their dividend payments. There is special justification of scrip dividends in the present situation of the Erie. The road has great quantities of traffic, is well managed and needs only a series of improvements to put it in a strong position financially. Once established as a cheaply operated through line between New York and Chicago it should be able to make returns on all of its very large capitalization. Even now, preferred dividends are being earned and the stockholders for that reason should get returns. On the other hand, money cannot be borrowed at reasonable rates and without funds work will have to be stopped on important improvements and part of the money already spent wasted. Therefore scrip dividends are a reasonable compromise between passing out money to stockholders which is greatly needed for the eventual betterment of their property, and paying nothing at all. Through the funds thus temporarily obtained it is probable that part at least of the note issues maturing in 1908 can be paid without going to the security market for new funds.

From the earnings' standpoint the past year was a prosperous one, particularly because operating expenses were kept in hand and



way, and a decrease of \$530,000 (6 per cent.) in maintenance of equipment. The wages of train employees and of several other classes in the transportation department were increased. There were increases in almost every one of the conducting transportation accounts, the principal exceptions being in car mileage, both freight and passenger, and in injuries to persons. The largest single increase was in cost of fuel for locomotives, which rose from \$4,000,000 to \$4,330,000. The good results of the year in the operation of the road are shown in the cost per locomotive-mile which, in the final analysis, is probably the most accurate single unit by which to judge railroad operating expenses. In spite of the increase in cost of fuel, supplies and wages, the total cost per locomotive-mile was reduced from 36 to 34 cents. The principal decrease was in the cost of repairs and renewals—a concrete illustration of the saving due to acquisition of new and modern motive power. There was an increase of 6 per cent. in the number of ton-miles, against an increase of 2 per cent. in the freight-train and freight-car mileage. The trainload rose from 455 to 472 tons and the carload from 19 to 20 tons. Although the average haul was slightly shorter, the ton-mile rate was 0.614 cents, against 0.598 cents in 1906, so that the freight earnings increased nearly \$3,000,000, or over 8 per cent.

Passenger earnings, with a small decrease in the passenger-mile rate, increased 5 per cent. Of the 24,200,000 passengers carried, 23,500,000 were local passengers and 683,000 through passengers. There was a larger increase in through passenger travel than in the previous year. The increase of 7 per cent. in passenger miles was handled with an increase of 4 per cent. in passenger-train mileage but of 8 per cent. in passenger-car mileage.

The Erie does what few other railroad companies do in showing its freight traffic by commodities. A table is given showing the tonnage of the year and of the preceding year with the percentage which each class was of the total traffic, and, in addition, the increase or decrease in each class of tonnage both in amount and per cent. Only by including all these figures can an accurate idea of the business of the road be quickly gained, yet many roads give merely the tonnage by classes during the year, sometimes without even giving the percentage which each class is of the total tonnage.

This table shows that anthracite coal is the largest single item of the Erie's tonnage; 22 per cent. of the total last year, against 20 per cent. in 1906, this with an increase of 16 per cent. in anthracite tonnage. Bituminous coal was 19 per cent. last year, against 20 per cent. in 1906. The principal proportionate increases in tonnage during the year were in grain, flour and other mill products, 18 per cent.; cotton, 55 per cent.; fruit and vegetables, 46 per cent.; dressed meats, 13 per cent.; petroleum and other oils, 17 per cent.; sugar, 24 per cent.; bar and sheet metal, 55 per cent.; forest products other than lumber, 27 per cent.; anthracite coal, 16 per cent.; iron and other ores, 28 per cent.; salt, 12 per cent. Live stock tonnage decreased 22 per cent.; "other packing house products," 37 per cent., and agricultural implements, 33 per cent.

President Underwood speaks of the present status of the construction work. The contemplated improvements to the line between Passaic Junction, N. J., and Highland Mills, N. Y., the eastern terminus of the Guymard cut-off, have been postponed. They will have to be carried out before the maximum benefits will be secured from the Guymard cut-off. As part of the plan for improvements east of Port Jervis, the Erie Terminals Railroad has been organized in New Jersey to build from a point on the New York and New Jersey state line, near Suffern, to the Hudson river; and the Suffern Railroad has been organized in New York to build from Suffern, on the present main line, to a connection with the line of the Erie Terminals company. These two companies will take care of the improvements south of Suffern.

Similarly in western New York, although the new cut-off from Hunts to Cuba is to be finished, its related line improvements between Hornell and Hunts and between Salamanca and Cuba have been postponed. The cut-off from Columbus, Pa., to Niobe, 13 miles, which is being built by the Columbus & Erie Railroad, has progressed satisfactorily during the year.

There are several interesting events not yet mentioned. The electrified line between Rochester, N. Y., and Mt. Morris, 35 miles, was put in operation in June and has already resulted in an increase of over 33½ per cent. in passenger earnings. This electrification was described in the *Railroad Gazette* of October 11 and October 18, 1907, with editorial comment in the earlier number. The American Locomotive Company in June delivered to the Erie the first of the three Mallet articulated compounds which are to be used as pushers over one of the worst summits on the road. These engines, which will push more than two consolidation locomotives of the heaviest type, represent the latest step in concentrated locomotive power. If they prove to be as successful in practice as there is reason to believe, they will probably eventually be adopted as a permanent type to strengthen the few points at which the regenerated Erie will have steep grades. A third feature of the year's operations which, though small proportionately, is of serious import to the company, is the increase of over 40 per cent. in taxes. This is almost entirely due to new laws in New Jersey whose legality is now being tested before the courts. During the year the contract with Wells, Fargo & Company for handling the express business on the Erie, which expired in 1916, was extended for a further period of 16 years.

One of the Erie's great problems has long been its suburban business. As will be seen even on the small scale of the map of the whole road, Erie lines are thickly clustered in the territory on the west side of the Hudson river between Newark, N. J., and Haverstraw, N. Y. The Erie has a tremendous commutation business which it is handicapped in serving. Betterment of the suburban service awaits the general terminal improvements at Jersey City, in particular, the completion of the new four-track cut which is to be used entirely for passenger service. Eventually the ferry trip will be eliminated. A contract was made during the year with the Hudson & Manhattan, which is building two tunnels under the Hudson river, by which the Erie is granted the use of the tunnels now building, together with valuable terminal facilities in New York. This contract will become partially effective as soon as the first tunnel of the Hudson & Manhattan is put in operation, which will be within a few months. Once the Jersey City improvements are finished, the Hudson & Manhattan is to build additional facilities at that point and the contract can be carried out in full. Then the Erie should be able to offer a particularly attractive suburban service.

The last two years' operations, not including the New Jersey & New York Railroad, 37 miles, or the coal companies, are summarized below:

	1907.	1906.
Mileage worked .....	2,169	2,151
Passenger earnings .....	\$4,458,282	\$8,982,811
Coal freight earnings .....	13,435,409	12,049,493
Other freight earnings .....	25,114,683	23,506,444
Gross railroad earnings .....	51,194,113	47,461,402
Maint. way and structures .....	5,087,975	4,600,230
Maint. of equipment .....	8,147,536	8,677,904
Conducting transportation:		
Traffic .....	967,923	904,771
Operation .....	18,107,485	16,644,723
Railroad operating expenses .....	33,579,959	32,059,130
Net railroad earnings .....	17,614,155	15,402,272
Net income .....	5,903,658	5,016,644
Additions and improvements .....	1,642,029	1,926,973
Year's surplus .....	1,705,933	533,975

#### St. Louis Southwestern.

The St. Louis Southwestern is one of the smaller Gould railroad properties. It lies directly in the territory of the St. Louis, Iron Mountain & Southern and probably on this account is managed quite independently of the other Gould railroads. It is not a great system, but a small compact railroad leading from various points in northeastern Texas, north through Arkansas and parallel to the Mississippi river to St. Louis. From the Mississippi river crossing at Illmo, Mo., to St. Louis, 138 miles, it runs over track used jointly with the St. Louis, Iron Mountain & Southern. The lines in Texas are owned by the St. Louis Southwestern Railway of Texas. The longest through line of the road, from Gatesville, Tex., to St. Louis, does not pass through the most important cities in the intervening territory, such as Fort Worth, Dallas and Sherman, Tex.; Shreveport, La.; Little Rock, Ark.; Memphis, Tenn., and Cairo, Ill., which are all reached by branches. The road is therefore largely dependent on the traffic which is produced along its own lines, a good deal of which gets the long haul from Texas to the Mississippi river gateways, as is shown by the average distance haul of the freight, which is 240 miles. The passenger travel is largely local, the average haul being 40 miles.

The St. Louis Southwestern is not and never has been a dividend paying road. The 1907 report is the sixteenth annual statement of the company's position. The railroad lines which were taken over in 1891 were of the lightest standard. The next few trying years gave no opportunity for making improvements, so that by the time that railroad prosperity returned in 1898 and 1899, the road was in need of almost everything. On June 30, 1897, there were only 24 miles of rail heavier than 56 lbs. to the yard in the whole mileage of 1,223 miles and all of this 24 miles of 75-lb. steel had been put in the track since June 30, 1894. There were only 94 miles of rock ballasted track and 347 miles of track ballasted with gravel and sand. Of the total of 1,223 miles, 736 miles were unballasted and 595 miles were unfenced. In the 1897 annual report the President urged the importance of continuing the work of fencing the track as the reduction in the amount paid for claims for stock killed and injured would make the expenditure a very profitable investment. These features of the condition of the property 11 years ago are suggestive in comparison with the road as it stands to-day.

On June 30, 1907, the total mileage of track with 85-, 75-, 70- or 60-lb. rails, mostly 75-lb., was 870 miles of the total of 1,310 miles owned. Of the same total, 859 miles were ballasted, leaving 451 miles of track, mostly in Texas, unballasted. At the same time all but about 300 miles of line were fenced. These figures deal with conditions on the lines owned and do not, as nearly as can be judged from the facts given in the report, include the lines over which the St. Louis Southwestern has trackage rights.

In the 1897 year gross earnings were \$4,800,000, or \$3,879 per mile of road and net earnings \$888,000, or \$726 per mile of road. Fixed charges and taxes, not including any payments on the second mortgage income bonds, were \$954,000, leaving a deficit from the year's operations of \$64,000. Last year gross earnings for the first time in the company's history were more than ten million dollars, or \$7,267 per mile of road. Net earnings were \$3,400,000, or \$2,312 per mile of road; fixed charges and taxes, including \$751,000 on the consolidated mortgage bonds which absorbed two-thirds of the second mortgage incomes, were \$1,850,000, leaving, instead of a deficit as in 1897, a net income after charges of \$1,700,000. This is a record of tremendous progress. It is due both to the growth and development of the Southwest and to the application of surplus earnings to the improvement of the property so that it has been in a position to handle the continually increasing traffic which has been offered to it.

Last year's record is the best in the history of the road. The increase in gross earnings was \$1,600,000, or 17 per cent. Operating expenses increased \$500,000, or 7 per cent., leaving net earnings of \$3,360,000, against \$2,290,000 in 1906, an increase of over \$1,000,000, or 47 per cent. The operating ratio was reduced from 75 to 68 per cent. These are remarkable gains. No railroad outside of the Southwest can show any such favorable results for the past year. The St. Louis Southwestern shared the fortunate experience of the other Southwestern roads in not only getting a large increase in gross earnings, but in being able to save most of this increase for net, while most railroads in other sections of the country had to see their increased earnings being used up in operating expenses.

Whether this rate of progress or one anywhere nearly so large can be maintained during the present year is a question. Vice-President and General Manager Britton states, under date of September 16, that general business throughout the Southwest is in a healthy condition and an improved traffic movement may be expected. Indications point to a fair cotton crop in spite of the fact that its lateness makes it peculiarly liable to harm from early killing frosts. The demand for lumber and forest products continues good and the movement is limited only by the available equipment. Especially is there increased traffic in hard woods, oak, hickory,



gum and cypress. Many new hard wood lumber mills have been located along the line to use hard woods from lands from which the yellow pine has been cut off. Completion of this lumbering will leave the land ready for agriculture. A great deal of such land is constantly being cleared and put under cultivation, so that the acreage along the line devoted to agriculture is each year increasing. Besides this, immigration has continued and many new commercial enterprises have been located whose result will be reflected in the traffic of future years.

On the other hand, Mr. Britton has a less cheerful story to tell under the head of adverse state legislation. Of this much has been encountered during the past year, such as requiring additional train service, additional station buildings and viaducts where not needed, equipping locomotives with electric headlights, many reductions in freight rates and "harassments encountered through orders from the several state railroad commissions." In Texas, for instance, orders have been issued establishing accounting methods widely at variance with the Interstate Commerce Commission standard, resulting in duplication of records and accounts and a corresponding increase in expenses. A number of the laws and the orders of the commissions have been appealed to the courts.

In regard to the reduction of passenger fares by law, Mr. Britton speaks as follows:

"During the past year, in obedience to public clamor, the legislatures of the states of Arkansas, Missouri and Illinois enacted 2-cent passenger fare laws which went in effect on April 10, June 19 and July 1, 1907, respectively, in the states named. While these laws apply only to intrastate business, their effect has been to compel this company and other railroad companies similarly situated to reduce their interstate passenger rates as well. Up

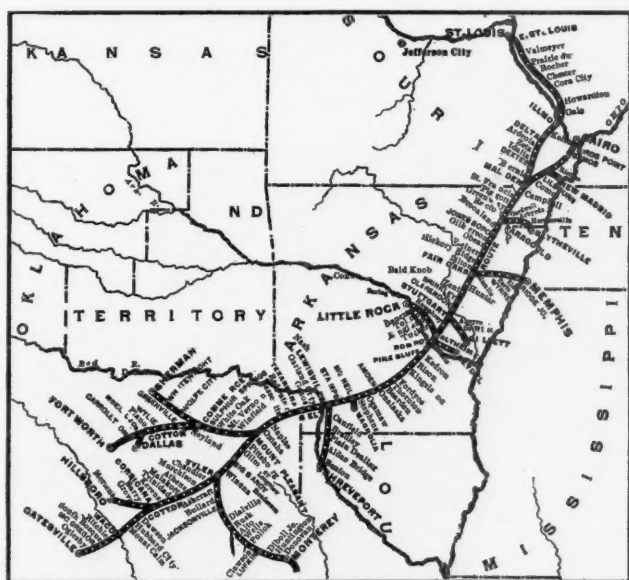
almost an equal amount of tonnage in each direction. The northbound tonnage is 54 per cent., and the southbound tonnage 46 per cent. of the total. Last year the southbound tonnage increased more than the northbound. This is shown in the reduction of percentage of empty car mileage to total car mileage from 28 to 25 per cent.

The total freight revenue increased \$1,200,000, or 18 per cent. This was due both to an increase of 8 per cent. in the number of revenue ton miles and of 9 per cent. in the ton-mile rate. The number of passenger miles increased 16 per cent., and the total passenger revenue 18 per cent., while the average revenue per passenger-mile increased 2½ per cent., which was possible because the passenger-rate deductions did not take effect until nearly the end of the fiscal year. There was a decrease of three miles, or 7 per cent., in the average passenger trip and, as a result, a decrease of 5 cents, or 5 per cent., in the average revenue per passenger.

There were some very large proportionate increases and decreases in the individual articles of tonnage. Wheat decreased 27 per cent.; oats, 52 per cent.; corn, 44 per cent., and "other grain and mill products," 15 per cent., while the rice tonnage increased 122 per cent.; fruits and vegetables, 30 per cent.; cotton, 84 per cent., and cotton products, 110 per cent. In justification of its title, "Cotton Belt Route," these last two classifications made up over 11 per cent. of the total tonnage. This as against 6 per cent. in the previous year. As most of this is through traffic, it is easy to see that the fine cotton crop of last year, more than any other one thing, was responsible for the road's prosperity. Under the head of manufactures and miscellaneous there were decreases of 11 per cent. in tonnage of sugar and molasses, 27 per cent. in petroleum and other oils and 57 per cent. in rails. On the other hand, castings and machinery increased 30 per cent.; wines, liquors and beers, 41 per cent.; agricultural implements and carriages, 41 per cent., and general merchandise, 21 per cent. The total of this group was 19 per cent. of the total tonnage, an increase of 10 per cent. over the previous year. The tonnage, as a whole, increased 8 per cent. over 1906 and was slightly over 3,000,000 tons, of which a little more than 2,000,000 tons originated on the road.

Nearly \$1,500,000 was spent on additions and betterments during the year. For these expenditures, however, the treasury was reimbursed by consolidated mortgage bonds which are being held subject to future sale. There was over \$321,000 advanced from the treasury for the same purpose, against which no bonds have yet been issued. The principal items among the additions and improvements were: Roadway and track, \$500,000; new side tracks, \$150,000; new roundhouses and shops, \$163,000; rails, \$109,000, and new buildings, \$104,000. At Pine Bluff, Ark., a modern steel and concrete car shop equipped with the latest machinery and a new power house have been built. The company now hopes not only to repair and replace all of its existing car equipment, but to build new cars from time to time. There were 115 miles of track laid with 75-lb. rails replacing 56-lb. rails. Work is now in progress ballasting the line between Mt. Pleasant, Tex., and Fort Worth, 154 miles. The bridges of the road have been improved, the two most important new bridges being one over the Brazos river at Waco, Tex., the other over the Red river at Shreveport, La., giving the St. Louis Southwestern its own line into Shreveport. At the same time the maintenance expenditures included in operating expenses were larger than in the previous year. Maintenance of way cost \$1,308 per mile of line owned, against \$1,257 in 1906. Repairs of equipment cost \$2,071 per locomotive, against \$2,040 in 1906; \$706 per passenger car, against \$636 in 1906, and \$71 per freight and work car, against \$53 in 1906—this last a noticeable increase to place the freight car maintenance on a proper level. There was a slight decrease in cost of repairs per locomotive mile, showing greater efficiency in power. There was an increase of 10 per cent. in number of locomotives and of 16 per cent. in total tractive power during the year. On the other hand, there was a decrease in the number of freight cars, a result which probably would not have come about if investment conditions had been more favorable. If its traffic continues to increase in the way it has during recent months, the St. Louis Southwestern will soon need to order new freight cars.

The St. Louis Southwestern has \$20,000,000 preferred and \$16,500,000 common stock outstanding. These are now selling at about 35 and 15 respectively. The surplus of \$1,571,497 earned last year after interest on the still remaining income bonds and after miscellaneous deductions, is equal to 5 per cent. on the preferred stock and 3½ per cent. on the common. The stockholders have had a long time to wait for any return on their holdings, but at the present rate of progress a dividend on the preferred stock would seem to be inevitable within a year or two. However, if the business reaction which is freely predicted, affects the Southwest, dividend payments will probably have to be postponed for a number of years longer. The railroad lies in territory which has a most hopeful immediate future so far as natural conditions are concerned, but which may, by severity in railroad legislation, cripple



St. Louis Southwestern.

to the time the first of these laws became effective, the increase in the volume of passenger traffic and the revenues derived therefrom, in the states named, was about 15 per cent. over the corresponding period of the preceding year, attributable to the very satisfactory business and crop conditions prevailing and to the development and colonization of the territory tributary to this line. While this increase was most gratifying, the volume or density of the passenger traffic by no means warranted or justified the large decrease, nor in fact, any decrease whatever, in the passenger rates. Since these laws became effective, the passenger revenues of the company, in the territory affected thereby, have shown a decrease, instead of an increase, compared with the same period of the preceding year. While it is hoped that the volume of passenger traffic will continue to increase in proportion to the natural growth of the country and its population, the passenger business, which has always been more or less unprofitable in the Southwest on account of the sparsely settled condition of the country will continue to be so for some time to come, unless some relief from these confiscatory rates can be obtained through legal process. With this object in view, the Missouri law is now being tested in the Federal courts on constitutional grounds."

The trainload in 1897 was 160 tons and the carload 11 tons, both including company freight. Only six years ago, the trainload was 236 tons and the carload 15 tons. Last year the trainload was 323 tons and the carload 18 tons. These figures are for the entire system. The Texas lines for the first time had a trainload of over 200 tons, while the average trainload on the lines north of the Red river was 426 tons, a satisfactory figure for a Southwestern road even though most of its mileage is through line. One strong point in the operation of the road is the fact that there is

its own growth and the growth of its railroads for several years. The last two years' results are summarized below:

	1907.	1906.
Mileage worked .....	1,454	1,452
Passenger earnings .....	\$2,028,481	\$1,713,474
Freight earnings .....	7,899,937	6,698,723
Gross earnings .....	10,553,135	8,989,564
Maint. of way and struct. ....	1,713,553	1,350,466
Maint. of equipment .....	1,383,417	1,189,334
Conducting transportation ..	3,707,592	3,433,387
Operating expenses .....	7,196,103	6,699,444
Net earnings .....	3,357,032	2,290,120
Net income .....	1,712,542	697,055
Income bond interest .....	130,420	130,420
Year's surplus .....	1,571,497	586,778

#### Pere Marquette.

The Pere Marquette, with over 2,000 miles of line, is the largest railroad now or for some time past in the hands of a receiver. The only other large road in such case is the Cincinnati, Hamilton & Dayton. The two went into receivership together on December 4, 1905, but their operations are kept separate. The annual report of the Pere Marquette just issued covers the first full year during which the road has been managed by the receiver, Judson Harmon; a year of successful progress in restoring a wrecked railroad property to independence.

As almost inevitably happens when a railroad company is forced into financial default, the road itself had been allowed to run down and wear out physically. The following table of the amounts spent during the last four years on maintenance per mile of line and per unit of equipment proves this concisely:

	1907	1906	1905	1904
Maintenance of way, per mile .....	686	679	720	533
Repairs of locomotives, per locomotive .....	1,975	1,890	1,940	1,333
Repairs of passenger cars, per car .....	426	427	441	403
Repairs of freight cars, per car .....	41	39	25	21

With the exception of the locomotive item, none, even of the present charges, are sufficient to permanently preserve the line or the car equipment. The record of the earlier years shows how inefficient were the tools with which the receiver was to work out the salvation of the property.

That, nevertheless, he has done this, is shown by the success, at a time when it was most difficult to raise railroad funds, of an offering of \$5,000,000 five-year 6 per cent. notes. These were offered to the stockholders in June and the issue was considerably oversubscribed at par. Yet the preferred stock, instead of being a guaranteed 4 per cent. stock, as the Cincinnati, Hamilton & Dayton agreed to make it, is quoted at about 30, while Pere Marquette common, on which the C., H. & D. guaranteed 5 per cent., is quoted at 8. The proceeds of this issue are to be used to pay off the outstanding receiver's certificates and take the road out of the hands of the court and return it to the management of its stockholders.

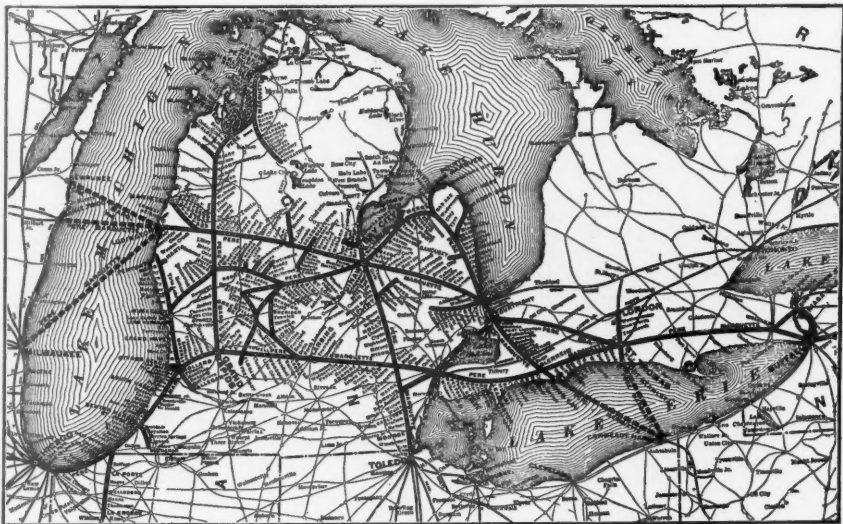
At the same time the present preferred stock is to be exchanged at 115 for 4 per cent. first preferred stock, cumulative after 1910. Present preferred shareholders, however, who did not subscribe to the note issue are to receive new second preferred stock in exchange for their present holdings. Common stockholders are to exchange their holdings for an equal amount of new common stock, plus an additional amount of new common stock equal to the par value of any notes for which they may have subscribed.

This reorganization plan is to be voted on at a special meeting of the stockholders next Monday, October 28. It is likely to be carried and by the end of the year the Pere Marquette, entirely separated from the Cincinnati, Hamilton & Dayton, will probably begin a new period of its history as a solvent, independent railroad. That it will long remain independent, however, is doubtful, though the fact that it has parallel lines with both the Michigan Central and the Grand Rapids & Indiana may prevent it from falling, as it naturally would otherwise, to either the New York Central or the Pennsylvania. As it stands, it is a fairly compact group of lines in central Michigan, some of them of light traffic. Besides this central group of local lines, it has a through line with connections by trackage rights at each end with Buffalo and with Chicago, and car ferry connections across Lake Erie and Lake Michigan.

The property has fared well during the year just past. Gross earnings were \$14,200,000, an increase of \$784,000, or 6 per cent. over 1906. Operating expenses were kept down so that they required only \$44,000 of this increase, and net earnings were \$4,200,000, an increase of \$740,000, or 21 per cent. There was a decrease, which amounted to almost as much as this gain in net earnings,

in payments for taxes. Taxes rose from \$414,663 in 1905 to \$1,196,918 in 1906, owing to the final decision, against the railroads, in April, 1906, by the United States Supreme Court of the Michigan railroad tax case. The contested part of the taxes for 1902, 1903 and 1904, and the entire taxes under the new law for 1905, with a penalty of 1 per cent. a month on the deferred payments immediately fell due and were paid. Last year there were no such back payments and there was a corresponding reduction in taxes. Other fixed charges, however, increased by \$143,000, leaving a net reduction in fixed charges of \$576,000. The net income after charges was \$432,000, against a deficit of \$861,000 in 1906, an increase of \$1,300,000 over the previous year's showing. This very favorable result is what makes it possible, fundamentally, to carry out a speedy termination of the receivership.

It will be observed that the satisfactory operating results were obtained not so much through increase in gross earnings as by keeping down operating expenses. As shown by the maintenance figures per mile of track and per unit of equipment, this was not done by spending less on the property. It was brought about by reducing the cost of the non-productive payments, conducting transportation and general expenses. In 1905, with 1,312,000,000 revenue ton-miles, conducting transportation cost \$6,272,000. It was reduced \$271,000 in 1906 and last year \$31,000 more, so that in a year when there were 1,715,000,000 revenue ton-miles and when wages and supplies cost more than in the previous years, conducting transportation cost only \$5,970,000. General expenses were \$381,000 in 1905, \$408,000 in 1906, and last year were reduced to \$365,000, less than the 1905 figure. The largest decrease under this head was in law expenses, which were \$26,000 against \$48,000 in 1906. Salaries of general officers were \$69,000, against \$76,000 in 1906. The principal changes in the conducting transportation account were increases in wage payments, fuel, loss and damage and advertising; and decreases in cost of handling fuel, injuries to persons, operating marine equipment (this a decrease of 25 per cent.), and outside agencies. Such a saving as the one in the cost of handling



Pere Marquette.

fuel is noteworthy, because it is a saving which represents increased efficiency and nothing else. Another economy of the same kind is mentioned incidentally in connection with one of the smaller improvements made during the year. New freight platforms and transfer sheds were built at Michigan City and at Detroit at a cost of less than \$5,000. Through them a saving of \$10,000 a year will be made in cost of transferring and switching freight at Chicago, Detroit and Suspension Bridge. Incidents like these prove that the present operating officers are taking advantage of chances for real economies.

The better operation of the road is shown in a decrease in the number of empty freight car miles. The empty mileage was reduced from 36,500,000 to 31,000,000. The revenue trainload was increased from 312 tons to 322 tons, and the average carload by half a ton. There were only six instead of seven empty freight cars in the average train, while the larger loading was carried in the same number of loaded cars as in the previous year. In spite, therefore, of a small reduction in the ton-mile rate, the average revenue per freight-train mile increased from \$1.86 to \$1.90.

The Pere Marquette's tonnage is made up 16 per cent. of agricultural products, 38 per cent. of mineral products, 20 per cent. of forest products, 12 per cent. of manufactures, and 12 per cent. of less than carload shipments and commodities not otherwise classified. There was an increase of 60 per cent. in the tonnage of fruits



and vegetables carried, which rose from 1.6 per cent. to 2.5 per cent. of the total tonnage. The tonnage of sugar beets increased 36 per cent. and now furnishes 2 per cent., against 1.5 per cent. in 1906, of the total tonnage. There was an increase of 63 per cent. in anthracite tonnage, which rose from 3.6 to 5.7 of the total; but the amount of bituminous coal carried decreased. There were decreases in every classification of forest products, the total decrease being 12 per cent. In 1906 forest products made up 24 per cent. of the total tonnage, against 20.5 last year.

There are entries which hint at previous bad bookkeeping and insufficient maintenance. For instance, the receiver has charged over \$1,000,000 during the year to profit and loss on account of depreciation of equipment. When the road was put in his charge there were on hand about 2,800 low-capacity, non-air freight cars and a number of old small locomotives. No provision had been made by previous managements for renewing this equipment, or for charging off the depreciation from year to year while in service. In order to preserve what value remained, it was decided to dispose of these cars and engines for their scrap value. All of them have been condemned and charged off, and nearly all of them have been scrapped or sold for scrap value. Their original cost has been credited to equipment renewal account, and their estimated depreciation, amounting as already mentioned to over \$1,000,000, charged to profit and loss.

The equipment was increased during the year by 4,000 36-ft. box cars of 8,000 lbs. capacity bought from the Pullman Company, delivered between October and March. In payment, \$4,346,753 receiver's equipment notes were issued, of which \$3,661,200 was for the cost of the cars and \$685,553 for accrued interest to maturity. These notes, issued in two series, are payable monthly, the final maturity of one series being 1913 and of the other 1914. To-day, according to the receiver, 70 per cent. of the freight cars have been bought within the last four years, while the rest are in good repair and will be available for heavy service for many years. The breaking up of the old cars and the purchase of a large number of new cars, puts the Pere Marquette equipment in position to compare favorably with that of any railroad in the United States.

The receiver was able to provide funds to put down heavier rails on over 80 miles of track. There were 35½ miles of 85-lb. rail laid on the main line, principally on the Toledo division. This released 75, 70, 67 and 60-lb. rail which, with 10 miles of 70-lb. rail released during 1906, was relaid at various points on 45½ miles of line of lighter traffic. This 45½ miles had been laid with 56, 40 and 35-lb. rails, most of which was scrapped and sold, the rest used for side tracks and repairs. New steel bridges on concrete abutments replacing wooden bridges and pile trestles were built at seven points up to the close of the fiscal year and work was then in progress on seven more bridges of the same sort. General repairs were made to 28 bridges. There were 25 concrete culverts built replacing wooden bridges, wooden culverts and pile trestles; five more are under construction. During the year there was a net charge of \$134,000 to additions and improvements.

The suit brought early in 1906 to annul \$3,500,000 Pere Marquette bonds issued in July, 1904, to pay for stock of the Chicago, Cincinnati & Louisville, which was then taken into the "Great Central System," was settled in April, 1907. In consideration of \$400,000 receiver's certificates and the abandonment of all claims of the Pere Marquette for advances to the Chicago, Cincinnati & Louisville, or for ownership of its stock, the \$3,500,000 Pere Marquette bonds were surrendered and canceled. This settlement was approved by the court in the receivership cause and the certificates forming part of the consideration were issued by its authority.

During the year the amount of receiver's certificates outstanding was increased \$619,180, as shown in detail by the following statement:

Amount outstanding June 30, 1906.....	\$1,619,180
Issued during the year on the dates and for the purposes shown below:	
July 2, 1906, to provide funds to pay interest due	
July 1, 1906, on the following bonds:	
Pere Marquette R. R. Co., collateral trust indenture 4 per cent. bonds .....	\$57,400
Pere Marquette R. R. Co., consolidated mortgage 4 per cent. bonds .....	167,640
Pere Marquette R. R. Co., refunding mortgage 4 per cent. bonds .....	181,140
Flint & Pere Marquette R. R., Toledo division, first mortgage 5 per cent. bonds .....	10,000
	419,180
March 1, 1907, issued as the consideration, among other things, for the surrender of certain bonds of the P. M. R. R. Co., amounting to \$3,500,000, with the unpaid interest notes or coupons issued therewith, and in settlement of certain litigation between the P. M. R. R. Co. and Wm. A. Bradford, Jr., and others.....	400,000
	819,180
	\$2,438,360
Less tax certificates issued May 5, 1906, paid and canceled Feb. 1, 1907 .....	200,000
Total receiver's certificates outstanding June 30, 1907 .....	\$2,238,360

On April 15, 1907, the South Haven branch from Lawton, Mich., to South Haven, on Lake Michigan, 34 miles, was leased to the

Kalamazoo, Lake Shore & Chicago Railway for 25 years. Accordingly this branch is not shown on the map. Steamer No. 5 was sold to the Barry Steamship Company. The proceeds of the sale are to be used to buy 59 new stock cars.

Receiver Harmon mentions the creation in Michigan of a railroad commission of three members which took office in September, and also the 2-cent passenger fare law of that state which took effect September 28. It appears that the commissioner of railroads made inquiry as to whether any contest of this law would be made by the Pere Marquette or by the receiver. He was informed that no contest would be made. On this point the receiver speaks as follows:

This course was determined upon after mature consideration, and is due to the desire of the receiver and of all concerned to accept as controlling the public sentiment in Michigan on that subject, a desire which outweighs the well-grounded belief that such a rate is unreasonably low in Michigan when applied without reference to passenger earnings per mile of road. It is hoped that increased patronage by the people of the state will make good the substantial loss inevitably resulting from such a large reduction of passenger rates. If a maximum rate of 2 cents per mile shall prove insufficient to meet the expenses of the passenger service and to allow a fair return on the value of the property used in the passenger service it is expected that the people of Michigan will, on being shown that fact, modify the law and allow a reasonable rate to be charged.

This is a tone which might well long ago have been adopted by most railroad officers.

The closing statement of the report before being signed by the receiver is a sincere acknowledgement of the co-operation of the officers and employees in helping him work out the salvation of the property. While he is the executive head, it must not be forgotten that he can be only indirectly responsible for the successful operating results, which must be due to General-Manager Cotter and his assistants. Mr. Harmon's acknowledgment of the help which he has received, though brief, has a different tone from the generally rather perfunctory acknowledgments of this sort in a railroad report. It is as follows:

The excellent showing for the year which the receiver is able to make, notwithstanding many adverse conditions, has been mainly due to the spirit and intelligence which the officers and employees have shown in the discharge of their several duties. This report would be incomplete without this acknowledgment of their intelligent devotion to the property and business of the road.

The principal results of the last two years' operations for the years ended June 30 are summarized as follows:

	1907.	1906.
Mileage worked .....	2,390	2,398
Passenger earnings .....	\$3,431,921	\$3,239,447
Freight earnings .....	9,902,158	9,605,899
Gross earnings .....	14,214,195	13,430,170
Maint. of way and struct..	1,639,447	1,627,307
Maint. of equipment.....	1,975,221	1,873,321
Conducting transportation..	5,640,323	5,563,681
Operating expenses .....	9,977,351	9,933,094
Net earnings .....	4,236,843	3,497,076
Taxes .....	477,817	1,196,918
Interest and rentals.....	3,465,792	3,322,455
Fixed charges .....	3,943,609	4,519,373
Net income .....	432,222	860,947*
*Deficit.		

#### Baltimore & Ohio.

The year 1907 might easily have been a very striking one in the history of the oldest railroad company in the United States. The eighty-first annual report might have recorded the transformation of the Baltimore & Ohio from being the Pennsylvania's second line of defence, to be, in fact, as well as in potentiality, the eastern end and principal trunk line outlet of the Harriman lines in the West. But Mr. Harriman has had his hands full since the Union Pacific acquired 18½ per cent. of its stock in the latter part of 1906, and plans for uniting the Baltimore & Ohio with the Pacific roads, whether or not seriously planned, have not been carried out. The only closer connection which has been made between the Baltimore & Ohio and the Harriman lines has been the establishment of a new steamship line by the Southern Pacific from Baltimore to New Orleans.

Although most briefly mentioned in the report, probably the most important special event of the year was the aggressive action of the Baltimore & Ohio in connection with the foreclosure of the Chicago Terminal Transfer Railroad. The Chicago Terminal Transfer owns the Grand Central Station in Chicago, the terminal tracks used in connection with it, and a belt line around the city. The Baltimore & Ohio, with the Pere Marquette and the Chicago Great Western, uses the Grand Central Station and terminals. Interest on the bonds of the Chicago Terminal Transfer was defaulted January 1, 1905, and on April 16, 1906, a receiver was appointed. A decree of foreclosure on February 20, 1907, advertised the sale of the property on May 3, 1907. In order to protect its lease of its passenger terminal in Chicago, which seemed likely to be bought by the Hill interests and turned over to the Burlington for its exclusive use, the Baltimore & Ohio, under its rights as lessee, came forward with an offer to redeem the Chicago Terminal Transfer bonds at par, which was generally accepted by the bondholders. By this

action it appears to have safeguarded its right to occupy the Chicago Terminal Transfer property, in spite of the fact that the Hill interests held control of a majority of the Terminal stock. After extended negotiations an agreement is reported to have been reached under which it is believed that the Burlington and the Baltimore & Ohio will use the Grand Central terminal jointly. What will happen to the other roads is not known. The effect of this somewhat unexpected event on the Baltimore & Ohio's finances for the year was that \$17,000,000 of the \$27,000,000 raised by the new stock issue of September, 1906, was tied up temporarily, yet apparently for some time. In consequence, the road at June 30, 1907, was left with very little surplus working capital. Aside from this, the year has been one of no special developments. The road has carried more business than in the record year 1906 and at a slightly higher average rate for freight, in spite of which its net earnings are smaller. There is no such extensive campaign of improvement under way as there was in the summer of 1906. In general, the year has been a comparatively uneventful one.

The Baltimore & Ohio is a heavy traffic road. Most of its tonnage is low-grade heavy freight. These are the items in their order which make up the largest proportion of the tonnage:

	Per Cent.
Bituminous coal .....	39.33
Coke .....	10.95
"Other castings and machinery" .....	7.51
Stone, sand and like articles .....	7.07
Miscellaneous .....	5.91
Ores .....	5.70
Lumber, bark, etc. ....	5.28
Cement, brick and lime .....	3.95
Grain .....	2.52
Iron, pig and bloom .....	2.45
Anthracite coal .....	1.85
Merchandise .....	1.13
	92.75

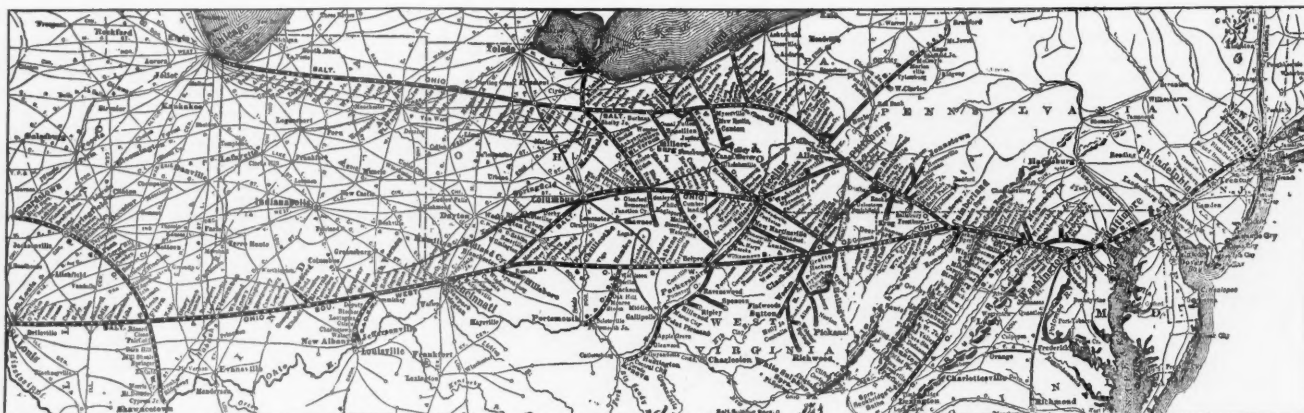
No other classification furnished as much as three-quarters of 1 per cent. of the total tonnage. Of the groups mentioned almost

There is published an instructive table showing the principal facts of the freight and passenger movement for the last twenty years. In 1888, with 1,774 miles operated, there were 11,200,000 tons carried at an average rate of 0.656 cents per ton per mile. In 1899, with 2,042 miles of line and 25,000,000 tons carried, the average rate was 0.390 cents, the bottom figure. The next year the ton-mile rate rose to 0.455 cents, and in 1907 it was 0.570 cents. This is the highest figure since 1896, with the exception of 1904, when 0.582 cents was the average rate. Last year, with over 4,000 miles operated, there were 58,400,000 tons of freight carried. The average haul was 194 miles, against 195 miles in 1888. This table gives an idea of the steadiness of the road's traffic and the importance to the Baltimore & Ohio of the average rate received. With satisfactory rates it can make large profits; without them it has more to fear than most large railroads, for it must depend largely on its regular sources of heavy traffic.

In 1888 there were 7,100,000 passengers carried an average distance of 32 miles at an average rate of 1.861 cents per mile. This rate dropped to 1.540 cents in 1894. Last year it was 1.956 cents, against 2.006 cents in 1906. In 1907 there were 17,500,000 passengers carried an average distance of 41 miles.

The trainload was 433 tons, against 426 tons in 1906. The average carload was 23 tons last year. The average earnings per ton of all commodities, including soft coal, were 1.11 cents; the average earnings per ton of soft coal were 79 cents. The average distance haul of soft coal and of all commodities was almost exactly the same.

Among the principal improvements carried on during the year were the new passenger and freight terminals at Wheeling, W. Va., where a new line substitutes a 1.3 per cent. grade (the ruling grade between Wheeling and Pittsburgh) for a 3 per cent. uncompensated grade on a curve of 17 degrees, equivalent to a grade of 3.5 per cent.



Baltimore & Ohio.

every one is made up of heavy or bulky articles. The traffic center of the road is in the West Virginia, Pittsburgh and Cleveland districts, from which it carries bituminous coal and iron and steel products both eastbound to Baltimore, Philadelphia and New York and westbound to Chicago, Cincinnati and St. Louis.

Gross earnings were \$82,200,000, against \$77,400,000 in 1906, but this increase of \$4,800,000 was all and more spent in paying for the handling of the increased traffic. Operating expenses were \$5,400,000 larger than in 1906, so that there was a decrease of over \$500,000 in net earnings. At the same time the operating ratio rose from 64 to 67 per cent.

Maintenance of way and structures increased \$1,200,000, maintenance of equipment \$934,000 and conducting transportation \$3,200,000. The payments for wages were about \$1,154,000 larger than in 1906, fuel and other supplies cost more and, on account of the accidents at Woodville, Ind., on November 12, 1906, and at Terra Cotta, D. C., on December 30, 1906, the item of injuries to persons rose from \$276,000 to \$773,000, an increase of nearly 200 per cent.

Maintenance of way cost \$2,632 per mile, against \$2,315 in 1906, this including no part of the more than \$4,000,000 appropriated directly or indirectly for improvements, and \$6,000,000 more charged to capital account. Equipment repairs cost \$2,486 per locomotive, against \$2,415 in 1906; \$851 per passenger car, against \$755 in 1906, and \$84 per freight car, against \$70 in 1906. The locomotive figures cover only the lines directly operated. The car figures are for the whole system, including nearly 500 miles of affiliated lines. Although the big increases in operating expenses were in the conducting transportation accounts, these figures make it evident that maintenance of both way and equipment was somewhat more liberal than in the previous year.

This work, which is well advanced and should be completed by 1908, includes new masonry abutments, pier and retaining walls, excavation for street depression, changes of tracks and of street car tracks, steel work for elevated tracks, a new power plant and a new passenger station 90 ft. x 250 ft., with two umbrella sheds, each 620 ft. long.

At Washington, D. C., grading for the joint coach and engine yards north of New York avenue extended, between Florida avenue and Langdon, has been about 95 per cent. finished; about 70 per cent. of the tracks have been laid; two 25-stall engine houses, machine and blacksmith shop, oilhouse, storehouse, signal tower, battery charging station, boiler houses, two-story enginemen's building, car repair shop, locker and washroom building, sandhouse and steel coal tipples are about 98 per cent. finished. There are under construction a four-story storehouse, power plant, a brick chimney 150 ft. high, oilhouse and three sheds for airing bedding and cleaning carpets. The Rhode Island avenue bridge has been built and the New York avenue bridge is 90 per cent. finished. The operations of the Washington Terminal Company, controlled jointly by the Baltimore & Ohio and the Pennsylvania, which is building the Washington terminal station, had been \$12,200,000 to June 30, 1907. The outside of the building, except cleaning down, pointing and putting on dome roof, is finished. The interior of the east wing is 96 per cent. advanced, the central section 90 per cent., the west wing 60 per cent., the concourse 96 per cent., the train sheds and platforms 90 per cent., the express building 95 per cent., the power house 98 per cent., the tracks 92 per cent., the interlocking and signal apparatus at K street 80 per cent. and at Massachusetts avenue 60 per cent. and the filling for the plaza 95 per cent. All masonry bridge work and filling, tunnel and girder work on both the north and south ap-



proaches has been finished. It is expected that train service will be begun next Sunday.

President Murray speaks as follows in regard to the state railroad legislation of the year:

There has been legislation on the part of a number of states which threatens most serious consequences to the carriers affected thereby. This action has been mainly confined to a reduction of the charge for the transportation of passengers to a maximum rate of 2 cents per passenger per mile. The states whose action affects your lines, and the dates such action became effective, are: Virginia, July 1, 1907, (with an exception as to B. & O. lines fixing the maximum at 3 cents per passenger mile); West Virginia, May 21, 1907; Ohio, March 10, 1907; Pennsylvania, October 1, 1907; Indiana, April 10, 1907; Illinois, July 1, 1907. Compliance with the above legislation required a revision of passenger tariffs and rates, and it cannot be said at this time with any positiveness to what extent your passenger earnings will be affected; that the reduction will be considerable admits of no reasonable doubt. In some sections the incentive to travel may afford some possible compensation, but in others nothing of this character can be looked for, and the result as a whole is problematical.

The following table shows in brief form the operations of the last two years, rearranged where necessary, according to our usual practice. The figures cover the lines directly operated and do not include the results of the Valley Railroad of Virginia; the Ravenswood, Spencer & Glenville; the Ohio & Little Kanawha; the Cleveland Terminal & Valley, and the Cleveland, Lorain & Wheeling, which have a combined mileage of 456 miles and gross earnings of \$4,151,936. The figures for the Baltimore & Ohio system excluding these controlled or affiliated lines, are as follows:

	1907.	1906.
Mileage worked .....	4,006	4,030
Passenger earnings .....	\$14,147,117	\$13,701,698
Freight earnings .....	64,625,946	60,002,204
Gross earnings .....	82,243,922	77,392,056
Maint. of way and struct. ..	10,542,499	9,330,859
Maint. of equipment .....	13,448,502	12,514,984
Conducting transportation ..	29,330,156	26,198,469
Operating expenses .....	54,880,091	49,515,221
Net earnings .....	27,363,831	27,876,835
Net income .....	18,561,302	19,142,275
Dividends .....	11,530,190	9,251,478
Improvement appropriation ..	4,115,672	4,077,975
Year's surplus .....	2,915,460	5,812,821

#### Nashville, Chattanooga & St. Louis.

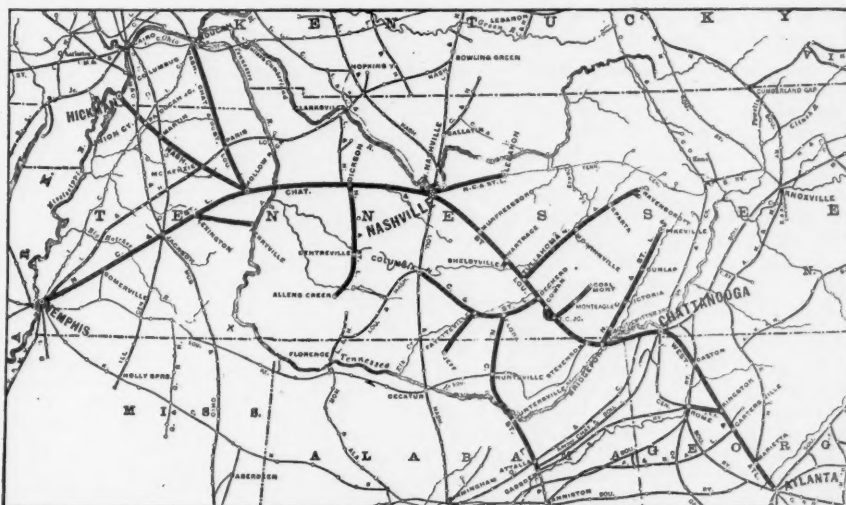
The Nashville, Chattanooga & St. Louis is controlled by the Louisville & Nashville and forms the most direct connection between the Louisville & Nashville's line from St. Louis and Georgia railroads in which the L. & N. is interested—namely, the Georgia Railroad and the Atlanta & West Point. The territory in Tennessee served by the Nashville, Chattanooga & St. Louis embraces two of the three iron ore producing districts in the state, the bituminous coal fields on the Cumberland plateau northwest of Chattanooga and the phosphate beds southwest of Nashville. These beds are the largest known deposits in the world. Grain and lumber also contribute largely to the traffic of the road. A great variety of timber is native to Tennessee, and much of it is valuable hardwood. During the fiscal year ended June 30, 1907, the total tonnage carried amounted to 5,930,000 tons, of which 3,890,000 tons originated on the lines of the road. Of this total tonnage 16 per cent. was coal, 4 per cent. coke, 5 per cent. ores, 6 per cent. stone, sand and similar material and 2 per cent. phosphate rock. The bulk of the traffic in these classes originated on the lines of the road. Grain took up 16 per cent., flour 4 per cent., other mill products 3 per cent. and hay 3 per cent.; lumber amounted to 10 per cent. and logs, posts, wood, etc., to 3 per cent. Products of animals amounted to 2 per cent. Among manufactures the most important articles are brick, cement and lime, which aggregated 3 per cent. of the total tonnage, and bar and sheet metal, iron and rails, 4 per cent. Among the above products the more noticeable changes, as compared with the figures of the preceding year, were an increase of 13 per cent. in coal and coke, an increase of 29 per cent. in ores and an increase of 15 per cent. in phosphate rock. Lumber increased 59 per cent., while logs, etc., decreased 51 per cent. Grain increased 15 per cent. and flour 15 per cent., while other products of agriculture remained about the same. There was a falling off of 16 per cent. in live stock. Pig iron and bloom, bar and sheet metal decreased slightly. It is interesting to notice that although there were big increases in the amount of building materials, machinery, tools and household goods originating on the lines of the company, much of this seems to have been shipped to other territory. The amount of merchandise originating on its own lines decreased from 217,000 tons to 169,000 tons, while

if the building materials, etc., had been for home consumption there would have been, presumably, a corresponding increase in the output of merchandise.

The history of the road dates back to 1854, when the Nashville & Chattanooga was built from Chattanooga to Nashville. The Nashville & Northwestern, from Nashville to Hickman, Ky., was built in 1869, and the two roads were consolidated under the name of the present operating company in 1873 and now form the main line, 320 miles long. There are about 500 miles of branches, which have been built or acquired from time to time from the early fifties up to 1890. Three of them run to the coal fields and others run to the phosphate fields and south to a connection with the Louisville & Nashville at Gadsden, Ala. The Western & Atlantic runs from Chattanooga to Atlanta, Ga., and was leased from the state of Georgia in 1890. The story of this state-owned road was published in the *Railroad Gazette* of August 2, 1907. In 1896 the Paducah & Memphis division of the Louisville & Nashville was leased, but its operations have been included in the accounts of the rest of the company only since 1900, when the lease was finally ratified. It runs from Paducah, Ky., south to a connection with the Nashville, Chattanooga & St. Louis at Hollow Rock, Tenn., about half way between Nashville and Hickman, and thence southwest to Memphis. The weights of rails on the Nashville, Chattanooga & St. Louis run all the way from 38 lbs. to 80 lbs., but, beginning with 1899, some 80-lb. steel has been laid each year, until now there are 278 miles thus equipped. Old trestles and bridges are being gradually replaced with steel girder and I-beam structures.

Gross earnings in 1907 were \$12,240,000, an increase of \$1,120,000; net earnings, \$4,040,000, a decrease of \$20,000. The operating ratio was 67.0 per cent. in 1907, 63.5 per cent. in 1906, 66.6 per cent. in 1905 and 63.5 per cent. in 1904. Large amounts for additions to property and equipment have been charged against income each year. The extent to which the company is turning earnings back into the road is still more noticeable in the maintenance charges during the last few years. Maintenance of way cost \$1,413 per mile in 1907, as against \$1,306 per mile in 1906, and \$1,257 per mile in 1905. Maintenance of locomotives per locomotive cost \$2,824 in 1907, \$2,313 in 1906 and \$2,470 in 1905. Maintenance of passenger cars per car cost \$677 in 1907, \$630 in 1906 and \$552 in 1905. Maintenance of freight cars per car cost \$74 in 1907, \$63 in 1906 and \$58 in 1905.

The company has \$10,000,000 capital stock and \$16,000,000 bonds, of which \$6,300,000 are first mortgage bonds secured on the main line and maturing in 1913; \$7,608,000 are first consolidated mortgage



Nashville, Chattanooga & St. Louis.

bonds of 1928, secured on the main line and branches; the rest are branch line bonds. The interest on these bonds amounted to \$947,640 in 1907. Rentals were \$626,460. These charges have been about the same for several years. The stock is now on a 6 per cent. basis, this being the annual rate of the last two semi-annual dividend distributions. In 1905 and 1906 5 per cent. annually was paid and in 1904, 4 per cent.

The principal results of operation were as follows:

	1907.	1906.
Mileage worked .....	1,230	1,226
Passenger earnings .....	\$2,407,401	\$2,207,804
Freight earnings .....	8,967,426	8,104,876
Gross earnings .....	12,238,472	11,120,982
Maint. of way and struct. ..	1,737,619	1,601,606
Maint. of equipment .....	1,606,418	1,338,293
Conducting transportation ..	4,501,038	3,874,606
Operating expenses .....	8,203,003	7,065,492
Net earnings .....	4,035,469	4,055,490
Net income .....	2,233,538	2,243,413
Income appropriations .....	1,527,158	1,289,421
Year's surplus .....	106,380	453,992

## NEW PUBLICATIONS.

*Railroad Operation in Italy.\**

This is a lecture delivered at its request before a meeting of the engineers of Milan last June during the railroad exhibition held there—not a simple half-hour address, but a plump pamphlet of 166 octavo pages in its printed form. The subject was timely, for the first year of the operation of the railroads by the state had been distinguished by a confusion and blockade of traffic, perhaps greater than has ever existed elsewhere since the first days of railroads—a natural consequence of the transfer of a system by operating companies which had long known that they would no longer have to provide for the needs of traffic, to a government which had done very little to equip itself for the work until the railroads actually fell into its hands. And the selection of Signor Spera to discuss the subject was natural; for he had given a good part of his life to the study of it. As early as 1895 he published a volume on possible reforms and economies in the working of the Italian railroads, which had been chiefly in the hands of three great operating companies since 1885; followed it by a second volume on the same subject in 1897, and by a third in 1904, just before the state took over the railroads (mostly its own property before 1885) from the companies. These volumes had been interspersed with many other pamphlets and lectures on Italian transportation questions, and the author as delegate of the Minister of Public Works reported on the International Railroad Congress in Paris, to the Minister of Agriculture on the Chicago Labor Congress in 1893, and studied our railroads at the time of the International Railroad Congress in Washington. Thus we may assume that his opinions were mature and based on long observation and reflection and wide knowledge.

The circumstances affecting railroad transportation in Italy are peculiar. A long and narrow peninsula stretching out between two seas, cut off from the rest of Europe by the Alps, and divided longitudinally by the Apennines, it would have been difficult to plan an efficient railroad system to serve the whole country; and as when railroad construction begun it was divided among a number of independent governments, there can scarcely be said to have been any plan at that time. It is a country lacking the bulky freights which burden the railroads of such countries as Great Britain, Belgium, Prussia, Saxony and large parts of this country; lacking coal, and therefore the primary iron industries. The population per square mile is less than in several other European countries; but per square mile of cultivable land it is excessive. The great valley of the Po is one of the most fertile agricultural districts in the world, and one of the best cultivated; on the other hand the Apennines cover a wide belt where there is little cultivable land; and in South Italy, with few exceptions, farming is deplorably backward. The nearness of the sea to all parts of the country has had less effect on railroad transportation than might have been expected. There are comparatively few deep harbors; Geneva and Naples, on the main land, are really great ports, and Sicily is so well provided that it exports and imports chiefly by sea. On the other hand, the country is full of towns, especially small ones; and where these have industries the raw materials have to be brought in large part from the ports or from beyond the Alps.

No one unless intimately acquainted with the circumstances of a country and of its different parts is qualified to criticize its system of railroad operation. But it is certainly true, as Signor Spera says, that such system ought to be planned to suit the circumstances; and that while road and rolling stock should be specially designed for the peculiarities of the traffic, the best machinery for transportation will be effective only when a high degree of ability is engaged in working it: that the operating engineer is as indispensable as the constructing engineer. Here our author finds the weak point of Italian railroad management. Methods of operation developed in other and very different countries were imitated at first and have been adhered to after they had been proved inefficient. The country has many small cities or large towns, each of which is the traffic center of a limited district. Four-fifths of the journeys are for distances less than 62 miles; not one-eighth of the freight is carried as far as 186 miles, and 53 per cent. of it less than 62 miles. Now these short hauls in Italy are effected only by three classes of slow trains—omnibus, mixed and "accelerated," usually infrequent, and for many places leaving or arriving at inconvenient hours. The delays are such that local freight in a very large proportion of cases can be delivered more quickly when hauled by horses than when shipped by rail. The 7,200 miles of railroad in Italy had in a recent year 1,558 millions of ton-miles of freight traffic, or 209,000 ton-miles per mile of road. In this country in 1906 the freight movement was 970,900 ton-miles per mile of road, or nearly five times as great, though we had less than 400 inhabitants per mile, and Italy more than 4,000. Per inhabitant there were 47 ton-miles in Italy and 2,540 in the United States. The American railroad man evi-

dently should be modest in applying his knowledge to Italian circumstances.

Without going into particulars of the reform proposed by Signor Spera, we may say that a chief feature of it is a strict separation of passenger and freight, light and frequent trains for the local traffic, running between local traffic centers 40 or 50 miles apart, the freight trains carrying a crew large enough to do all the loading and unloading at stations; and provision for the long distance and heavy traffic in the way of double-track, yards and stations, and some new lines, not so much unlike the work we are engaged in here.

*The Chemistry of Commerce.* By Robert K. Duncan, Professor of Industrial Chemistry at the University of Kansas. 263 pages; 5½ in. x 8½ in.; 59 illustrations. Published by Harper & Brothers.

Professor Duncan's theme is the applicability of science to modern industry. This does not seem to need proof, familiar as we are with the glowing articles in Sunday supplements hailing new discoveries and heralding revolutions in trade or transportation because of them. But it seems that manufacturers in this country do not read the Sunday papers; at least, there is a lack of what Professor Duncan calls the sympathy between learning and manufacture. The new processes described by him are almost entirely confined to Germany, although France and Italy are also ahead of us in using the investigations of chemists in improving their products, and, as the author says, "even in England there is abroad in the land the spirit of applied science." The function of the manufacturer is two-fold; it is to make as efficient an article as possible and to make money out of it. His success in the one should naturally depend on his success in the other, but in America, especially during the last few decades, he has been able through control of the market, to maintain or increase his earnings in spite of waste in production and comparative inferiority of his product. The problems of manufacture have been marked by the tariff, the abundance of raw material and the enormous demand that made competition mild. But now overproduction is in sight, the supply of raw material is to a great extent controlled by a few men and even the tariff is not eternal. In the last chapter of the book, the author describes a plan looking to the solution of these manufacturing problems whose solution is now becoming necessary. Industrial Fellowships may be established at the University of Kansas by manufacturing companies. The endowment, all of which goes to the holder of the fellowships, extends over a period during which the Fellow has the university's laboratory facilities in seeking to improve the manufacture of a specific product. His contract with the endower is broad and gives great advantages to both, while the university has the right, three years after the Fellow has finished his investigations, to publish a thesis embodying the results of his work, this, of course, having nothing to do with any patents that may be taken out. Professor Duncan's book is most readable; it is general, rather than specific, knowledge that he presents and so clearly that the reader absorbs it without conscious effort.

*Explanation of Switch and Signal Circuits.* By John T. Doran. New York: Doran & Kasner. Cloth, 137 pages. Price, \$1.50.

This book describes the electric block and interlocking signal system installed in the Electric Zone of the New York Central. No statement is made to this effect although the language used assumes that the reader is well acquainted with the installation mentioned. The book is useful for the circuit plans contained, these being typical of an A. C. signal system applied to a road which is electrically operated. But the descriptions are incomplete and far from clear, and the reader gains no satisfactory idea of the signal system. The following announcement on the title page is unique: "A Handbook of Diagrams and Information for Electrical Signal Constructors and Maintainers at a Glance, all that ordinary Signal Men Need and Nothing They do Not Need." That a relay must be used with a track circuit, and that when more contacts are required than one relay will provide a second or repeater relay must be used are facts well known; but signal maintainers cannot be expected to realize this when told that "A track circuit governs the polyphase relay, which, when operated, completes the S. T." The author is much in need of the new signal dictionary, to learn that a signal having two or more home arms is not called a "root," as is stated on the circuit diagram shown, but is a route signal.

## CONTRIBUTIONS

## Seth Wilmarth and His Locomotives.

Yeadon, Pa., Oct. 5, 1907.

TO THE EDITOR OF THE RAILROAD GAZETTE:

Will you permit me to call your attention to two errors in my article on "Seth Wilmarth's Locomotives" in your issue of Sept. 27th? Beneath illustration of engine "Pioneer" your printers have named the date of building as 1871, and 1949 as the year in which the

\*L'Esercizio Ferroviario in Italia, nei suoi rapporti con l'economia del paese, e la scienza del trasporto. Da l'Ingegnere Giuseppe Spera, Roma, 1907.



"Fury" first appeared. These should be 1851 and 1849 respectively, and as the drawings show these latter dates distinctly we will in this case have to lay the blame on the shoulders of the long-suffering printers.

C. H. CARUTHERS.

#### Convention of the American Street and Interurban Railway Association, and Affiliated Associations.

The twenty-sixth annual convention of the American Street and Interurban Railway Association and its affiliated associations, the American Street and Interurban Railway Engineering Association, the American Street and Interurban Railway Accountants' Association and the American Street and Interurban Railway Claim Agents' Association was held at Atlantic City, N. J., Oct. 14 to 18 inclusive.

##### ENGINEERING ASSOCIATION.

The Engineering Association, which includes the mechanical, electrical and maintenance of way departments, held its meetings in the sun parlor on the Steel Pier from Oct. 14 to 16, President H. H. Adams (Baltimore) in the chair. President Adams in his opening address laid particular stress on the work of the committee on "Standards," and strongly recommended the adoption of the committee's report. He acknowledged the hearty co-operation and assistance given this committee by the manufacturers and extended an invitation to them to take part freely in the discussions. Referring to one of the questions in the "Question Box" relating to the number of men employed in maintenance in the various engineering departments, he pointed out the value of comparative data in determining whether this work was being done as economically and efficiently as it might be with the facilities at hand.

Other addresses were delivered by John I. Beggs (Minneapolis), president of the "American" Association; Past President Olds (Milwaukee), who reviewed briefly the progress in electric railway engineering since its beginning, and C. L. S. Tingley, President of the Accountants' Association.

The following reports and papers were presented at the meetings: Control Apparatus, paper by F. E. Case, General Electric Co.; Maintenance and Inspection of Electrical Equipment, J. Lindall (Boston Elevated), chairman; Care of Electric Railway Tracks, paper by L. Wilson (Minneapolis); Rail and Rail Matters, Julian Griggs (Scioto Valley Traction Co.), chairman; Rail Corrugation, F. G. Simmons (Milwaukee), chairman; Standards, W. H. Evans (Buffalo), chairman; Open Versus Closed Terminals for Car Storage, E. W. Olds (Milwaukee), chairman; A Year's Experience with Gas Engines, paper by Paul Winsor (Boston Elevated); the Parsons Steam Turbine, paper by St. John Chilton (Allis-Chalmers Co.); Operation of Curtis Turbines in Railway Service, paper by A. H. Kreusl (General Electric Co.); Recent Developments in Steam Turbine Power Station Work, paper by J. R. Bibbins (Westinghouse Mach. Co.); "Question Box" of 55 questions. Some of these papers with the discussion on them will be reprinted in subsequent issues.

The officers elected for the coming year were: F. G. Simmons (Milwaukee Electric Railway & Light Co.), President; Paul Winsor (Boston Elevated), First Vice-President; F. H. Lincoln (Philadelphia Rapid Transit Co.), Second Vice-President; W. H. Evans (International Railway Co., Buffalo), Third Vice-President; J. W. Corning (Boston Elevated), Secretary and Treasurer; Members of Executive Committee, W. J. Harvie (Utica & Mohawk Valley), Wm. Roberts (Northern Ohio Traction & Light Co., Akron), E. O. Ackerman (Columbus Railway & Light Co.), John J. Murphy (Chicago Union Traction Co.).

##### "AMERICAN" ASSOCIATION.

The American Street & Interurban Railway Association met in the sun parlor on the Steel Pier, Oct. 16 to 18, with President John I. Beggs (Twin City Rapid Transit Co., Minneapolis) in the chair. President Beggs in his annual address first called attention to the fact that the Secretary of the Association now has permanent offices in the new United Engineering Societies Building, 29 W. 39th street, New York. He proposed a plan for the establishment of paid secretaries for all four of the affiliated associations and the maintenance of a statistician and other clerks to carry on the fast growing work of the associations. He regretted that the past year had been marked by very unsatisfactory relations existing between many of the companies, members of the American Association, and the municipalities in which they operated. He believed, however, that the wave of unreasonable prejudice, denunciation and unwise legislation was at its crest and is already beginning to recede. He ventured to predict that until a radical change is worked in the minds of the public it will be almost impossible to obtain additional capital necessary to make the extensions and improvements necessary to give to the cities and towns the transportation facilities which their increasing growth demands. He looked forward to the time when the several states would appoint intelligent and impartial commissions to investigate and regulate the conditions of operation and remove the company's property from the exploitation of grafting local politicians. The continued development of single-

phase alternating-current machinery was gratifying but it should not be lost sight of that equally important developments were constantly being made in direct-current machinery. The matter of depreciation accounts was important particularly in view of the present agitation in favor of municipal ownership and valuation of public service properties.

The presidents of the three affiliated associations also spoke at the opening meeting and gave a brief report of the year's progress to the parent association.

The following committee reports and papers were presented at the meetings, some of which will be reprinted in subsequent issues with the discussion thereon: Car Wiring, J. W. Corning (Boston Elevated), chairman; Standardization of Equipment, H. C. Page (Springfield, Mass.), chairman; The Technically Trained Man and the Electric Railway Profession, paper by Prof. H. H. Norris (Cornell University); The National Fire Protection Association, paper by Ralph Sweetland (Boston, Mass.); Influence of the Design of Railway Structures on Economy of Operation, paper by H. T. Campion and William McClellan (Consulting Engineers, New York); Rules for Government of Motormen and Conductors, E. G. Connette (Worcester), chairman; Light Freight Handling by Electric Lines, paper by P. P. Crafts (Iowa & Illinois Ry. Co.); Freight Service on Electric Railroads, paper by H. H. Polk (Interurban Railway Co., Des Moines); A Department of Publicity, paper by J. H. White (Boston Elevated); Advertising from the Street Railway Standpoint, paper by A. W. Warnock (Twin City Rapid Transit Co., Minneapolis); Problems of a Small Road, paper by H. S. Cooper (Galveston Electric Co.); Insurance, H. J. Davies, chairman; Rules for the Construction of Car Houses; Municipal Ownership, C. D. Wyman (Boston), chairman; Heavy Electric Traction, Calvert Townley (N. Y., N. H. & H.), chairman; Compensation for Carrying Mail, G. H. Harries (Washington), chairman; Use of T-Rail in Cities, paper by C. Gordon Reel (Kingston, N. Y.); Public Policy of the Past and Future, paper by C. L. Allen (Utica & Mohawk Valley); Interurban Railway Fares, paper by Theodore Stebbins (New York); Municipal Ownership in Great Britain and the United States, paper by William J. Clark (New York); Public Relations, W. Caryl Ely (Buffalo), chairman.

The officers elected for the coming year were: President, C. G. Goodrich (Minneapolis); First Vice-President, J. F. Shaw (Boston); Second Vice-President, A. W. Brady (Anderson, Ind.); Third Vice-President, T. N. McCarter (Public Service Corporation of N. J.); Secretary and Treasurer, B. V. Swenson (New York).

##### CLAIM AGENTS' ASSOCIATION.

Meetings of the American Street and Interurban Railway Claim Agents' Association were held at the St. Charles Hotel, Oct. 14 to 16, with H. C. Bradley, Acting President, in the chair. The following papers were presented: Policy of the Claim Department to the Injured Employee, by R. H. Schoenen (Lehigh Valley Traction Co., Allentown, Pa.); The Claim Agent of To-day and His Work, by H. K. Bennett (Fitchburg, Mass.); How I Manage Bad Cases, by H. P. Vories (Pueblo, Colo.); Selecting and Training Investigators and Adjusters for the Claim Department, by E. C. Carpenter (Indiana Union Traction Co.); Making the Claim Department Effective, by C. B. Hardin (United Railways Co., St. Louis); Instruction of Employees in Accident Work, by F. W. Johnson (Philadelphia Rapid Transit Co.).

The following officers were elected for the coming year: President, H. R. Goshorn (Philadelphia Rapid Transit Co.); First Vice-President, A. J. Farrell (International Ry. Co., Buffalo, N. Y.); Second Vice-President, W. F. Weh (Cleveland); Third Vice-President, J. S. Harrison (Jacksonville, Fla.); Secretary and Treasurer, B. B. Davis (Columbus, Ohio).

##### ACCOUNTANTS ASSOCIATION.

The American Street and Interurban Railway Accountants Association met at the Chalfonte Hotel, Oct. 15 to 17, with President C. L. S. Tingley in the chair. The programme included the following papers and committee reports, some of which will be reprinted in subsequent issues: Amusement Park Accounts, paper by F. J. Pryor (American Railways Co., Philadelphia); Mechanical Devices and other Office Appliances, paper by F. E. Smith (Chicago Union Traction Co.); Where Maintenance Ends and Depreciation Begins, paper by J. H. Neal (Boston Elevated); committee reports on "Standard Classification of Accounts" and "International Standard Form of Report."

The officers elected for the coming year were: President, F. R. Henry (St. Louis, Mo.); First Vice-President, R. N. Wallis (Fitchburg, Mass.); Second Vice-President, W. H. Forse (Indiana Union Traction Co.); Third Vice-President, S. C. Rogers (Newcastle, Pa.); Secretary and Treasurer, E. M. White (Birmingham, Ala.).

##### Exhibits at the Street Railway Conventions.

The following were among the exhibitors at the American Street and Interurban Railway Association convention at Atlantic City, Oct. 14 to 19. The exhibits were arranged on the Steel Pier and all the booths and decorations were the same as used for the exhibits at

the M. C. B. and M. M. Association conventions last June. The exhibit was larger than in any previous year.

Adams & Westlake Co., Chicago.—Gravity ratchet brake handles; street car hardware; street and interurban railway signal lamps of all kinds; arc and incandescent electric headlights.

Allis-Chalmers Co., Milwaukee, Wis.—Three-car train (two motor and one trail car) air brake equipment with Allis-Chalmers OB governor and type J emergency valve; single car straight-air brake equipment; sectional models of governor and emergency valve; exhibit of essential parts of Allis-Chalmers improved Parsons steam turbine and large revolving racks containing pages from company's publications.

American Blower Co., Detroit, Mich.—One 80-in. steel plate fan, belt driven; one No. 5, type P, blower with nozzle outlet; one 5-in. x 5-in. type A, vertical engine, driven by direct-connected generator run as motor; steam coil heater section; model of dry kiln; one 24-in. "A. B. C." disk ventilating fan.

American Brake Shoe & Foundry Co., Mahwah, N. J.—Exhibit of M. C. B. standard brake heads and shoes; proposed standard brake head and shoe, interchangeable with M. C. B. standards, for electric trucks having wheels of 3-in. tread or wider; proposed standard brake heads and shoes for electric trucks with wheels having treads less than 3 in. wide; standard brake heads and shoes adopted by the Central Electric Railway Association. Brake shoes include "Diamond S," Streeter, "U," and "Special" shoes, plain and flanged, with and without steel back reinforcement.

American Locomotive Co., New York.—Electric motor trucks for medium and high-speed service.

American Mason Safety Tread Co., Boston, Mass.—Samples of American Mason safety treads; Empire safety treads; Karbolith car flooring.

American Railway Supply Co., New York.—Employees' hat and coat badges.

Atha Steel Casting Co., Newark, N. J.—Cast-steel body and truck bolsters; Titan manganese cast steel motor gears for electric trucks.

Baldwin Locomotive Works, Philadelphia, Pa.—Class 90-40 electric motor trucks under W. B. & A. car exhibited on track by Niles Car & Mfg. Co., and equipped with G. E. 125 h.p., A. C. motors on each axle, 5½ in. x 10-in. journals, steel tired wheels.

Carey Manufacturing Co., Phillip, Cincinnati, Ohio.—Samples of asbestos paper and millboard, all weights; asbestos wick, rope and sheet packing; 85 per cent. magnesia coverings; cork and wool felt coverings for low temperature insulation; magnesia flexible cement roofing.

Chicago Pneumatic Tool Co., Chicago.—Full line of electric and pneumatic tools; electric drills for A. C. and D. C. current, sizes from ¾-in. to 3-in.; grinders, tool post, pedestal and portable types; electric hoists, 250 lbs. to 2,000 lbs. capacity; electric track drill for bonding; electric drill for driving screw spikes.

Consolidated Car Heating Co., New York.—Electric car heaters, longitudinal and cross-seat types; portable vestibule heater; car heater and headlight switches; automatic cab heater switch; 600-volt signal system to replace dry batteries, to enable passengers to signal motorman or conductor; air motor system for operating doors of electric cars.

Cook's Standard Tool Co., Kalamazoo, Mich.—Standard car and track jacks; Standard and Climax track drills; track tool grinders and high speed drill bits; cattle guards.

Crocker-Wheeler Co., Ampere, N. J.—Photographs of large power-generating stations.

Curtain Supply Co., The, Chicago.—Curtains of Pantasote, Oakette and Crown materials, equipped with Forsyth No. 86, Ring No. 88 adjustable and self-righting fixtures; Keeler eccentric fixtures for closed cars; Acme, Climax and Forsyth cable fixtures; Ring closed groove fixtures for open cars and for Brill semi-convertible cars.

Dearborn Drug & Chemical Works, Chicago.—Boiler compounds and methods of water treatment; samples of oils and greases.

Dixon Crucible Co., Jos., Jersey City, N. J.—Structural steel building painted with Dixon's silica-graphite paint; samples of graphite pencils, crucibles, lubricants; graphite gear grease; motor brushes; graphite products particularly adapted to street railway use.

Duff Manufacturing Co., The, Allegheny, Pa.—Duff ball-bearing jacks; Barrett trip jacks, Barrett automatic lowering jacks; Barrett armature lifts.

Edwards Co., The O. M., Syracuse, N. Y.—Exhibit of 26 designs of window fixtures; four designs of vestibule trap doors; shade rollers and roller sash balances; window fixtures for drop sash.

Electric Storage Battery Co., Philadelphia, Pa.—Type R 83 chloride accumulator cell of 5,000 amperes capacity; smaller cells for signal work, spark coils, etc.; carbon regulator; recording and regulating hydrometers; automatic cell filling apparatus; apparatus for regulating A. C. loads.

Evans, Almirall & Co., New York.—Photographs and plans of installations of the Evans-Almirall system of water heating by forced circulation with exhaust steam.

Galena Signal Oil Co., Franklin, Pa.—Reception booth.

Garlock Packing Co., Palmyra, N. Y.—Samples of fibrous and metallic packing.

General Electric Co., Schenectady, N. Y.—Parts of 1,000 k.w. Curtis turbo-generator; G. E. railway motors; air-brakes; control apparatus; full line of electric specialties.

Gold Car Heating & Lighting Co., New York.—Exhibit of electric heaters and switches.

Goldschmidt Thermit Co., New York.—Specimens of work done with thermit, including welded motor cases, pipe joints, rails; specimens of metals free from carbon, including metallic manganese, chromium, molybdenum, ferro-vanadium, manganese-zinc, manganese-copper, manganese-tin, ferro-titanium, ferro-tin, etc.; crucibles, mold boxes and other apparatus used in the thermit process. Demonstrations out of doors of thermit welding of rail bonds, gear cases, etc.

Gould Storage Battery Co., New York.—Types S, U and O storage batteries in lead-lined tanks; type battery in Apert glass jar; sets of types WS and X storage couples; samples showing development of plates and photographs of storage battery installations.

Grip Nut Co., Chicago.—Square and hexagon grip nuts in all sizes.

Howe Sand Dryer, C. F. Towne, Sales Agent, Binghamton, N. Y.—A 10-ton capacity Howe sand dryer in operation; model of 20-ton capacity dryer, showing arrangement of vapor boxes and steam coil pipes.

Johns-Manville Co., H. W., New York.—Victor combination meters, both portable and switchboard types; overhead line material; Noark fuses; Transite asbestos fireproof lumber; rail bonds; asbestos pipe covering, roofing and packing; J. M. friction tape and other insulating and fireproof materials.

Kalamazoo Railway Supply Co., Kalamazoo, Mich.—Root snow scraper and flanger; improved Moore track drills; track-drill chuck; high-speed track drill bits; Kalamazoo reinforced pressed steel wheels.

Kinnear Mfg. Co., Columbus, Ohio.—Full-size rolling steel doors for car barns, operated by chain and combined crank and motor hoists.

Lackawanna Steel Co., New York.—Abbott rail joint plates; Abbott composite steel and concrete tie; Abbott track gage plate.

McConway & Torley Co., The, Pittsburgh, Pa.—Pair of model cars fitted with Janney M. C. B. coupler and radial draft gear as designed for electric interurban and street cars; sample of Cox rail joint.

Maryland Railway Supply Co., Baltimore, Md.—Section of track showing the "Spike Strut" rail fastener as applied to standard T-rail and ties; a longitudinal section through a tie, exhibiting the action of the "Spike Strut" on the wood fiber and position assumed when driven home; Witherbee storage battery; Monarch metal polish.

Mummiert, Wolf & Dixon Co., Hanover, Pa.—The "Plurality Die" bolt cutter; samples of bolt cutting dies.

National Lock Washer Co., Newark, N. J.—Models of car windows fitted with National cam curtain fixture; balance protected groove curtain fixture, sash lock and sash balance; samples of lock washers in different sizes and styles.

Norton Grinding Co., Worcester, Mass.—Pair of ground car wheels mounted on axle and revolving against indicators to show accuracy of wheels; standard street car axle finished by grinding; photographs of car wheel grinder; two panels showing samples of alundum grinding wheels and India oil stones.

Pantasote Co., New York.—Samples of Pantasote car curtains and seats upholstered in Pantasote.

Pittsburgh Pole & Forge Co., Pittsburgh, Pa.—Sections of tubular iron poles with hot process joints; rail bender.

Quincy-Manchester-Sargent Co., Chicago.—Q. & C. Bonzano rail joints for T and girder rails; Q. & C. Stanwood car steps; anti-creeper; compromise joints; Samson rail bender.

Rail Joint Co., The, New York.—Exhibit of "Continuous," Weber and Wolhaupter types of rail joints for T and girder rails and compromise joints.

Ramapo Iron Works, Hillburn, N. Y.—Automatic switch stands; switches and frogs; tie plates.

Ridgway Dynamo & Engine Co., Ridgway, Pa.—Booth in concert hall with catalogues and photographs of power plant installations.

Riverside Metal Co., Riverside, N. J.—Reception booth in ballroom.

Samson Cordage Works, Boston, Mass.—Waterproof trolley cord; colored bell and register cord; wire center armature cord; solid braided rope.

Schoen Steel Wheel Co., Pittsburgh, Pa.—Two sets of motor truck wheels mounted on axles taken from service; one freight and one passenger, showing wearing qualities of Schoen rolled steel wheels; full line of sample rolled steel wheels for all classes of electric service.

Sherwin-Williams Co., The, Cleveland, Ohio.—Samples of all kinds of car, locomotive and structural paints and varnishes; pole paint; insulating varnish and impregnating compounds.

Standard Paint Co., New York.—Samples of Ruberoid roofing, colored roofing and flooring; S. P. C. flexible iron fender paint; P. & B. baking varnishes; clear and black finishing varnish; air-drying and core-plate varnishes; S. P. C. armature and field coil varnish; electrical compounds; insulating tape.

Standard Steel Works, Philadelphia, Pa.—Rolled and forged steel wheels mounted on axles, taken from service; steel-tired wheels with various tire fastenings; pressed steel gears; cast steel gears and forged gear rim; helical and double elliptic truck springs.

Symington Co., The T. H., Baltimore, Md.—Proposed standard journal boxes for electric motor equipment; special journal boxes for third-rail shoe supports, etc.; Symington machine pivot journal box lid; Symington M. C. B. type lid; special journal boxes for street cars with limited clearance; Baltimore ball-bearing center plates and side bearings; Gilchrist rail chairs.

Underwood & Co., H. B., Philadelphia, Pa.—Samples of St. John self-adjusting cylinder packing; portable boring bar in operation; portable milling machine in operation; portable crank pin turning machine; two-cylinder air motor in operation; portable Corliss valve seat boring bar; vacuum dash pots for Corliss engines.

U. S. Metal & Mfg. Co., New York.—Columbia lock nuts; Victor and Perfect car replacers.

Walworth Manufacturing Co., Boston, Mass.—High and low-pressure valves, steam specialties and tools; Walmanco high-pressure steam joint; safety water column; Neverstick blow-off cock.

Washburn Steel Castings & Coupler Co., Minneapolis, Minn.—M. C. B. type coupler for interurban cars applied with radial draft gear; box pilot coupler for electric locomotives; type K radial traction coupler; couplers for dump and ballast cars.

Western Electric Co., Chicago.—Electroline line insulation; Shelby trolley poles; Kalamazoo trolley wheels and hasps; deltabeston wire; Amazon and Dryfield tapes, and a full line of other electric specialties.

Westinghouse Companies, Pittsburgh, Pa.—The Westinghouse Electric & Manufacturing Company exhibited a full line of single-phase and direct current motors for electric traction; span of catenary construction with pantagraph trolley in operation; arc lamps; 500 k.w. Westinghouse-Parsons steam turbine open for inspection (joint exhibit with Westinghouse Machine Company); Union switch system of multiple control; single-phase electric locomotive (on track space). The Westinghouse Traction Brake Company exhibited AML equipment, electro-pneumatic brake system, portable blowing outfit, AMM and SME equipments, EL electric locomotive equipment, Westinghouse automatic car and air coupler.

Wharton, Jr., & Co., Inc., Wm., Philadelphia, Pa.—Exhibit of manganese steel special track work for steam and electric railways; spring switch throws, anti-kickers, tongue locks and other switch constructions.

Wilson Manufacturing Co., Jas. G., New York.—Sliding swing door with chain hoist; rolling wood door with glass panels for roundhouses; interlocking slat rolling steel door; solid sheet type rolling steel door; also drawings and photographs showing rolling doors electrically operated.

Yale & Towne Mfg. Co., The, New York. Duplex and triplex chain hoists of various sizes; electric trolley hoists; chain blocks; photographs of shop hoists.

#### Gas Engines in Street Railway Service.\*

The Boston Elevated Railway Co. has now been operating gas engine plants for electric generating purposes for more than a year with very satisfactory results. At the Somerville power station there is a pair of gas producers, two gas engines of 600 h.p. and two 350 k.w. generators.

This plant was started in May, 1906, and since then has given continuous, reliable and satisfactory service. There have been no shutdowns, no accidents and no failures. The fuel has been soft coal, the same as used in our steam stations, mostly run-of-mine Pocahontas.

A great deal of water is used for scrubbing the gas and for cooling purposes. The average amount has been 281 lbs. per k.w.-hour. When this water was bought, as it was for a few months, it cost about twice as much as the coal. Since November, 1906, it has been pumped from a very dirty brook by means of two-stage centrifugal pumps, electric driven; and filtering through a pressure sand filter. This outfit has been entirely satisfactory and has given us no trouble. The suction lift is 12-ft. and the pressure at the pumps 30-lb.

The discharge of water from the gas scrubbers is very dirty,

\*Abstract of paper presented to the American Street and Interurban Railway Engineering Association, in convention at Atlantic City, by Paul Winsor, Chief Engineer of M. P. & R. S., of the Boston Elevated Ry.



being full of floating lampblack, and is altogether too black to put back into our dirty brook. A sand filter basin 246 sq. ft. in area and tile under-drained, removes all of the lampblack, so that water is being turned back into the brook in a cleaner condition than when it was taken out.

During the first months, back fires and pre-ignitions were much too frequent, occurring almost every day. Lowering the compression on one of the cylinders, changes in the igniters, and experience have reduced these troubles so that now two or three weeks are passed without a single one. This plant has proved absolutely reliable. It can be put into service any time in less than five minutes—much quicker than can our steam plants. It can carry good loads and do it continuously. Each unit has carried 450 kilowatts (652 brake horse-power) for an hour, with swings to 495 kilowatts (717 brake horse-power).

For the first seven months of this year this plant used 2,034-lb. coal per k.w.-hour, while the steam plants averaged 3,477-lb. per k.w.-hour—a saving of 41.5 per cent. One of the smaller steam plants, containing three 200-k.w. compound condensing engines, used 4,414-lb. per k.w.-hour; this gas station used only 46.1 per cent. as much.

There is good evidence to show that a gas engine plant, making its own producer gas, will operate at least as reliably as a steam plant and will use from 30 to 60 per cent. less fuel, depending somewhat on the size of the gas plant, but principally upon the size of the steam plant. The drawbacks to the gas plant are the high first cost and the smallness of the size of the units; the largest gas engine now built, being of but about 3,000 kilowatt capacity.

#### Convention of the Superintendents of Bridges and Buildings.

The Association of Railway Superintendents of Bridges and Buildings held its seventeenth annual convention in the Republican Hotel, Milwaukee, Wis., October 15, 16 and 17. President J. H. Markley (T., P. & W.) was in the chair. The convention was welcomed by Mayor Becker, of Milwaukee. R. H. Aishton, General Manager of the Chicago & North-Western, delivered an address, in which he spoke of the importance of the work of this association, and suggested the adoption by it of standard methods and designs covering much of its work and thereby aiding the American Railway Association. The address of President Markley had for its chief theme self-reliance, and the members were urged to cultivate and exhibit this quality in the discharge of their official duties.

The present membership of the association, including nine new members taken in during the convention, is 374. The balance in the treasury is \$1,370. H. P. Morrill (C. & N.-W.), C. W. Vandegrift (C. & O.), and J. H. Cummin (L. I.) were elected life members. Suggestions to change the name of the organization to The Railway Bridges and Buildings Association, also to change the time of meeting, were discussed, but both were rejected. The officers for the ensuing year are: President, R. H. Reid (L. S. & M. S.); First Vice-President, J. P. Canty (B. & M.); Second Vice-President, H. Rettinghouse (W. C.); Third Vice-President, F. E. Schall (L. V.); Fourth Vice-President, W. O. Eggleston (Erie); Secretary, S. F. Patterson (B. & M.), (re-elected); Treasurer, C. P. Austin (B. & M.), (re-elected); Members Executive Committee, A. E. Killam (I. C.), J. S. Lemond (Sou.), C. W. Richey (Penna.), T. S. Leake (Mo. P.), W. H. Finley (C. & N.-W.), J. N. Penwell (L. E. & W.). Washington, D. C., was selected as the next place of meeting.

There were two addresses delivered during the convention, the first being by W. H. Finley, Assistant Chief Engineer of the Chicago & North-Western, on the Quebec bridge and the failure of same. It was a discussion of the design of the structure as compared with other notable long-span bridges, particularly the Firth of Forth bridge in Scotland, and of the American type of structure as compared with other types; a denial of the assertion, made in many non-technical quarters, that the attempted span was too great for the present state of the art, and some comment regarding the possible cause or causes of the failure. The second address was by Prof. W. K. Hatt, of Purdue University, on the work of the Forest Service of the United States Department of Agriculture in investigating the strength of structural timber. He explained the elements influencing the strength of such timbers, exhibiting specimens sawed from different kinds of woods, such as long-leaf yellow pine, short-leaf pine, Douglas fir, etc.

Following its peculiar custom, the convention devoted the remainder of the first day and a part of the second to the discussion of last year's reports. Little new information of importance was developed; in fact, this customary threshing over of old straw seems of exceedingly doubtful value, since not only of itself is it of little if any profit, but it curtails seriously the time which ought to be devoted to the new reports. If the association will persist in this practice it should reverse its present procedure, disposing of its new reports first, and then devoting what time may remain to the reports of the previous year.

The standing-committee subject of water supply was the first

of the new reports taken up. The report was merely the tabulated results of some pumping tests made on the Illinois Central railroad. A member asked about the practice at some stations of turning the pump exhaust into the discharge line in order to raise the temperature of the water for locomotive use. No one had any information to offer on the subject, however. The matter of using kerosene in gasoline pumping engines received the most attention. One member reported using this oil after getting the pump started and heated up with the gasoline, saving considerable in the cost of operation. It was stated that gasoline engine makers would equip the engines for the oil, the change for a 10 or 12 h.p. engine, for example, costing about \$50. Methods for using the kerosene alone were described. One member complained that in his use of the two fuels he had had trouble with the exhaust, which emitted smoke, or carbon, indicating imperfect combustion.

On "Fire Protection," standing subject No. 3, there was no report, but the subject was discussed. P. Swenson (Soo) protects the bridge stringers with galvanized iron, and reported that some which had been so covered for 17 years were still in good condition. President Markley allows his timbers to season for a year before covering with metal, which insures longer life through greater freedom from decay. But while the use of the galvanized iron unquestionably prolongs life, it prevents inspection, and is objectionable on this account, as has been brought out before in similar discussions of the subject. Mr. Killam (Int. of Can.) keeps all rotten spots adzed off the tops of the ties and bridge timbers, which has proved an excellent preventive of fires.

Mr. Sibley (N. Y., N. H. & H.) asked if water barrels were effective in proportion to the cost and trouble of keeping them constantly in condition for instant use. Mr. Canty (B. & M.) thought them undesirable and the continual loss of the pails a great bother as well as a continual expense. J. F. Parker said that on the Coast Lines of the Santa Fe they use metal barrels. Those on the bridge or trestle have a piece of burlap convenient for soaking in the water and dashing it on an incipient fire. The barrels at the ends of the bridge have hinged tops that are closed and locked with a switch lock. Queries about avoidance of freezing of the contents of protective barrels in cold weather brought statements that the use of a strong brine prevents this.

There was no discussion or other action on the report on "Fences, Road Crossings and Cattle Guards."

"Preservatives for Wood and Metal" brought out the usual queries and testimony concerning the life of creosoted timber, the amount of penetration obtained, etc. The advantages of crude oil as a preservative were spoken of by some members, but the greatly increased inflammability was a serious objection to its use. However, J. F. Parker reported that the Santa Fe has been using it for 10 years, soaking the timbers for entire bridges, and they give no thought to any augmented fire risk and have no trouble in that respect either.

On the matter of preservatives for metal, Mr. Penwell (L. E. & W.) thought there was nothing that comes up to red lead. Mr. Reid (L. S. & M. S.) told of a tar compound that is being applied to their track elevation bridge floors in Chicago. The workmen call it "dope" and it is highly effective, taking off mill scale when it is removed and leaving the steel surface bright and clean. The great problem, in connection with a suitable and effective preservative, is in getting the steel work properly cleaned for repainting, this being a vital point.

It was decided to make this subject of preservatives for wood and metal a standing committee subject.

In presenting the report on smoke-jacks, Mr. Lichty (C. & N.-W.) spoke of the maintenance troubles that the building department has with these very necessary and usually more or less unsatisfactory features of engine houses. The committee report, which is printed in part on another page, and the discussion in the convention, indicate a general preference for wooden jacks. In reference to the Chicago & Eastern Illinois' wooden jacks, A. S. Markley said they have had the design in use for 10 years or more and all of their houses are so equipped, except one built this year on which they are trying one of the patented materials. He asserted that weather conditions have far more effect on the action of a jack than its form. The drawing of the C. & E. I. jack reproduced in the report shows a cap on the top. This has been dispensed with as being a detriment to the free action of the jack. The amount of rain which the exposed top will admit is unobjectionable. Very few of these jacks, even of the first applied, have had to be removed on account of decay; there has been no trouble whatever from fire, since there is no place for soot and other fire-causing materials to lodge, and they do not have to paint them, relying instead on the soot and moisture to form a coating on the inside, which protects them effectually. Their cost, at present lumber prices, is from \$20 to \$25.

Mr. Penwell explained that the Lake Erie & Western jack shown in the report is newly adopted by them. It is square in section, costs about \$60, and its life, based on past experience, is estimated at seven years.

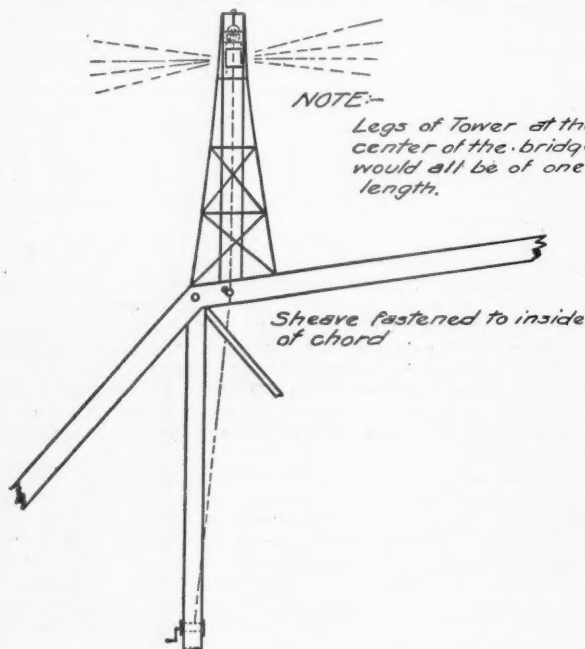
P. J. O'neil (L. S. & M. S.) thought the weight of cast-iron jacks a very objectionable feature, 1½ or 2 tons in each panel of the engine house roof being sure to cause trouble unless the roof is specially designed or reinforced to sustain such a load.

Because of its interest it was agreed to continue the subject for another year.

The report on fastenings for freight house and other doors was not discussed.

"Towers and Guides for Drawbridge Lights" likewise received little discussion. The chairman of the committee stated that in investigating the subject he was surprised to discover that 68 per cent. of the railroads of the country have no drawbridges. This matter of character and location of lights for these bridges is controlled by the Government's lighthouse board, of course, the application being the point which each road determines for itself. Ease of placing and removing is the important feature, and the scheme of the Toledo, Peoria & Western shown herewith was considered the best of any reproduced in the report. Concerning it J. H. Markley said: "The one great advantage is that no guide for the lamps is needed until the bottom of the tower is reached; at that point the bale of the cage containing the lamp enters the guide head and is raised to the top of the tower. It matters not how much the lamp swings or in what direction, it cannot enter the guide head but one way, which is the right way. There is no climbing whatever to do; the operator stands on the deck of the bridge and with a ½-in. rope that passes over a pulley at the top of the tower, raises everything into position."

On the subject of protecting steel bridges against the action of



Toledo, Peoria & Western Railway's Method of Hanging Light on Drawbridge.

brine from refrigerator cars, while it was evident that the members are extremely anxious to have this evil corrected in some effective way, but realized their impotence to have the private car line owners respond to any demands they might make, or already have made. J. P. Snow (B. & M.), in a written communication, thought that Government aid should be invoked to compel the private car owners to act in the matter. A. S. Markley said that while the use of concrete decks on bridges eliminated the trouble so far as floors were concerned, that still left the rails unprotected and Government aid could be asked on the grounds of endangering traffic.

The subject of concrete building construction received no discussion. Also the subject of the action of sea water on concrete was only briefly discussed. Mr. Parker (A., T. & S. F.) said they had tried all kinds of imported and domestic cements for this use, and had found only one that is satisfactory, giving the name of the brand.

On "Expansion and Contraction of Concrete Walls," the discussion consisted almost entirely of citations by different members of observations and experiences in regard to the effect of temperature changes on such structures.

The following are the standing committee subjects for 1908:

1. Pile and frame trestle bridges.
2. Fire protection.
3. Fences, road crossings and cattle guards.
4. Construction of cofferdams.

5. Preservation of timber.

6. Coaling stations and cinder pits.

The special subjects for committee investigation and report are:

1. Waterproofing of concrete-covered steel floors and subways.
2. Modern equipment and tools for the erection of steel bridges.
3. Protection of structures against the effects of electric currents.
4. Protection of embankments from the effects of high water by riprap or otherwise.
5. Experience in the use of gasoline and kerosene engines, or combination of same, for water supply, drawbridges, etc.
6. Modern dwelling houses for section foremen and section men in outlying districts.
7. Reinforced concrete culverts and short span bridges.
8. Methods of erecting truss bridges, (a) under traffic, (b) free of traffic.

#### Bridge and Buildings Supply Men's Association.

At the Milwaukee convention of the Superintendents of Bridges and Buildings the exhibitors held a meeting and formed a permanent organization bearing the name given above. The officers are: President, Charles Ernschaw, Manager Standard Paint Co., New York; Vice-President, W. W. Johnson, Franklin Manufacturing Co., Chicago; Secretary, T. R. Wyles, Vice-President Detroit Graphite Co., Detroit, Mich.; Treasurer, S. Reid Holland, Eastern Granite Roofing Co., Chicago; Executive Committee: For one year, F. J. Johnston, American Hoist & Derrick Co., St. Paul, Minn., and H. A. Neally, Jos. Dixon Crucible Co., Boston, Mass.; for two years, J. T. McGary, American Valve & Meter Co., Cincinnati, Ohio, and C. C. Lazenby, Otto Gas Engine Works, Chicago; for three years, N. C. Durie, N. C. Durie Co., St. Louis, Mo., and J. H. Eames, Sherwin-Williams Paint Co., Chicago.

Following is the list of exhibitors at the convention:

- Allith Mfg. Co., Chicago.—"Reliable" round-track door-hangers; fire underwriters' approved automatic door equipment; continuous parallel door equipment for freight stations, warehouses, etc.
- American Hoist & Derrick Co., St. Paul, Minn.—Photographs of the "American" ditcher, hoisting engines, etc.
- American Valve & Meter Co., Cincinnati, Ohio.—Catalogues, blue-prints, etc., of stand-pipe float valves, tank fixtures, switchstands, etc.
- Barrett Mfg. Co., New York and Chicago.—General line of the Barrett specifications for roofing and water proofing; tar-rock sub-floors for machine shops and storehouses.
- J. A. & W. Bird Co., Boston, Mass.—"Rex Flintkote" roofing, Ixex insulating and building paper, Bird's bull's-eye belting, Ripolin enamel paint and Rex red roof paint.
- Buda Foundry & Mfg. Co., Chicago.—Carborundum tool grinders, ball-bearing bridge jacks, Buda reinforced lever scales and street crossing gates.
- Carboliteum Wood Preserving Co., Milwaukee, Wis.—Photographs of structures using "Carboliteum" wood preserver; testimonials, etc.
- Philip Carey Mfg. Co., Cincinnati, Ohio.—Full line of "Carey" roofing for buildings.
- Detroit Graphite Co., Detroit, Mich.—Samples of "Detroit" graphite paint, literature, etc.
- Paul Dickinson, Inc., Chicago.—Dickinson cast-iron smokejacks and cast-iron chimneys and ventilators for roundhouses; photographs of roundhouses containing the Dickinson devices.
- Jos. Dixon Crucible Co., Jersey City, N. J.—Dixon's silica graphite paint for steel bridges.
- N. C. Durie Co., St. Louis, Mo., and Chicago.—Malleable iron washers for bridge and building construction.
- Eastern Granite Roofing Co., New York. Granite roofing for buildings.
- Fairbanks, Morse & Co., Chicago.—Literature descriptive of pumping plants, coaling stations, motor cars, etc.
- Franklin Mfg. Co., Franklin, Pa.—Samples of asbestos lumber and shingles.
- E. F. Houghton & Co., Chicago.—"Vim" leather packings for deep-well pumps; new "Vim" leather air-brake packings of steer hide, treated by new process.
- H. W. Johns-Manville Co., New York and Milwaukee, Wis.—"Magnasite" smokejack, "vitribestos" smokejack, asbestos roofing and pipe covering, "key-stone" hair insulator, asbestos building lumber, building papers, etc.; the "Exceloid" roofing.
- Chas. R. Long, Jr., Co., Louisville, Ky.—Station and bridge paints.
- J. C. McFarland & Co., Chicago.—"Alpha" double-hung hollow metal window frames for office, mercantile and factory buildings; photographs of buildings containing "Alpha" frames.
- National Roofing Co., Tonawanda, N. Y.—General roofings, "Hydroclad" double-faced roofing for cement work, "Security" brand of asphalt roofing, and "Permanere" mineral asphalt paint.
- Natural Carbon Paint Co., Freeport, Ill.—Samples of metals protected with "Mindura," showing effect of several years' wear under railroad bridges. Samples of pigment and ore from which pigment is prepared.
- Otto Gas Engine Works, Chicago.—Photographs and drawings of coaling stations, water-softening plants, etc.
- Arthur E. Rendle, New York and Western Paradigm Co., Chicago.—Full-sized models of "Paradigm" skylights and fireproof windows glazed with ribbed glass and wire glass, supplemented with full-sized details of all parts of the structures.
- Standard Asphalt & Rubber Co., Chicago.—Waterproofing for concrete structures, bridge floors, etc., damp-proofing for buildings and protection against electrolysis, mastic flooring and brick paving with asphalt filler.
- Standard Paint Co., New York.—"Ruberoid" roofing, "Flexite" colored paints, and "S. P. C." iron paints.
- Stover Motor Car Co., Freeport, Ill.—Six-passenger gasoline motor inspection car.
- Stowell Mfg. & Foundry Co., Milwaukee, Wis.—"Wilbern" adjustable hangers for freight house doors, latches for roundhouse and depot doors, and hangers and fixtures for fireproof doors.
- U. S. Wind Engine & Pump Co., Batavia, Ill.—"Mansfield" and U. S. water columns, and U. S. hydraulic valve.
- Gifford Wood Co., Hudson, N. Y.—Pamphlets showing ice elevators, conveying machinery and ice tools.



## Causes of Defects and Failures of Steel Tires.\*

BY GEORGE L. NORRIS, M.E.,  
Chemist, Standard Steel Works.

With few exceptions, the tires used in the United States are all made from (acid) open-hearth steel, which, because of its uniformity in quality and cheapness, as compared to crucible steel, has practically driven the crucible steel out of the market. In Europe most

from the short or single tire ingot are liable to contain defects from this cause. In manufacturing from a short ingot no cropping is discarded from the top of the ingot, the only discard being the small disc of metal punched from the center of the bloom.

About 1890 the Standard Steel Works conducted a series of tests comparing the tires made from short or single tire ingots, and long ingots from which several tires could be cut, and in which the top portion of the ingot containing the piping and segregation was discarded. A paper on the results of these tests was contributed to the American Institute of Mining Engineers by A. A. Stevenson, M.E. As a result of these investigations the Standard Steel Works adopted the practice of making all tires from bottom-poured long ingots, as the only way to reduce to a minimum the number of tires failing in service on account of casting defects in the ingot.

Both the long and short ingots are usually bottom-cast in groups, fed from a central runner. The long ingots are octagonal in sec-

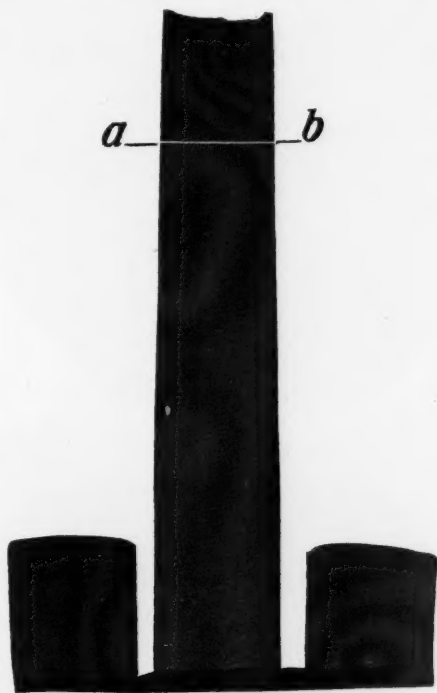


Fig. 2.

Fig. 1.

Fig. 3.



Tire.

Tire.

Fig. 4.

Tire.

Discard.

tire steel is made by the open-hearth process, and some by the crucible process, but tires of (basic) Bessemer steel are also commonly used. The conditions of service, especially as to wheel loads, are not, however, as severe as in America.

The grade of steel used for tires in Europe is much softer than that used in America, as shown by some of the typical analyses in the table in the next column.

Up to 1890 it was the general practice to make tires from short ingots, each ingot being sufficient to make only one tire. As it is practically impossible to cast an ingot of steel, no matter how small, without pipe and segregation in the upper end, tires made

tion, about 72 in. long, and vary from 13 in. to 20 in. across. The short ingots are usually cylindrical, though conical ingots are common abroad, and generally have a dome shape top. They vary in diameter and height according to the size of tire to be made. Unlike the long ingot which remains fluid for some time and gives an opportunity for the steel to teem, and the gases and impurities to rise to the top, the short ingots set quickly and the piping, gas cavities and other defects, as compared with the long ingot, occupy relatively a larger portion.

Even with the minimum amount of piping possible, the punching does not always entirely remove the defects, and consequently the tires made from short ingots more frequently contain these defects. The illustrations, Figs. 1 to 12, plainly show the superiority of the long ingot over the short for manufacturing tires of homogeneous structure. Fig. 1 is a full length section of a long ingot, from which the piped portion above the line *a-b* is discarded, while

Fig. 2 is a section of the ordinary short or single tire ingot from which nothing is discarded but a small thin disc in punching the bloom. Fig. 3 is a section of a tire bloom from a long ingot. The contrast between it and the short ingot is very marked. Fig. 4 shows the manner of cutting an ingot into tire blooms. Figs. 5 and 6 show the fractures of a long ingot cut up into blooms, and Fig. 7 is an enlarged view of a typical fracture. The central pipe shown in the left-hand blooms

of Fig. 6 is punched out in forming the tire. Fig. 8 is an etched section of a tire made from a long ingot bloom, and shows the homogeneity of structure obtained by this method of manufacture. Figs. 9, 10 and 11 show etched sections of tires made from short ingots, illustrating the presence of the original casting defects. Fig. 12 is a section through a conical ingot such as is used to some extent in Europe. For soundness this possesses no advantage over the ordinary cylindrical, short ingot.

During the past few years, owing to increased speeds, wheel loads and severity of service, steel tires have more frequently developed that condition on the tread, commonly termed "shelly" or "flaky" spots. This condition is also often referred to as "soft spots,"

## Typical Analyses of Tire Steels.

	American.	French.	English.	English export.	German.	Krupp export.
Carbon .....	.55-.75	.40	.36	.52-.61	.35	.55-.85
Silicon .....	.250	.100	.080	.190	.150	.300
Phosphorus .....	.050	.050	.055	.030	.095	.060
Manganese .....	.65	.66	1.25	.75	.38	.60
Sulphur .....	.050	.065	.050	.030	.040	.045
Ult. tensile strength.	100,000 to 135,000	95,000	85,000	107,000 to 123,200	90,000	105,000 to 135,000
Elongation, per cent.	20 to 10	12	26	17 to 14	28	17 to 8
Reduc., per cent.	30 to 12	..	39	23 to 18	38	25 to 9

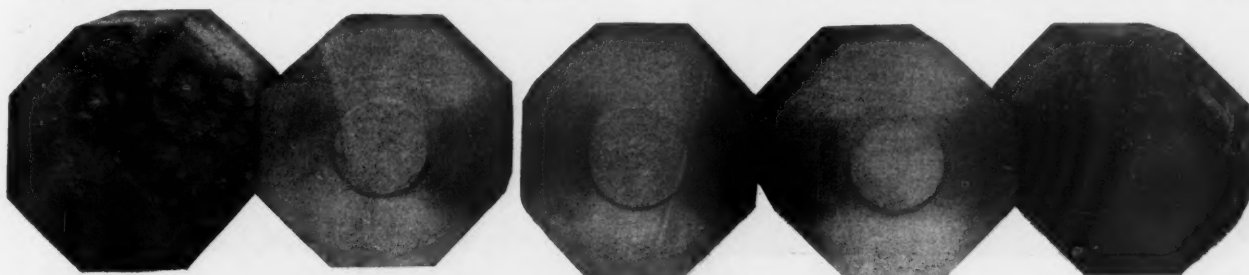


Fig. 5.

\*A paper read at the October meeting of the Western Railway Club.

"porous," or "honey-combed metal," "sand holes" and "unwelded metal." It is in the nature of a breaking down of the tread into flakes or scales by numerous cracks which penetrate into the tire, principally in the area of rail contact. A tire developing such a condition is not considered dangerous, and consequently is not always promptly removed. Hence the shells or flakes rapidly spread over a greater length of the tread, and the cracks penetrate so deeply into the tire that a large amount of steel is wasted in turning up the tire to remove all traces of the shelliness. Fig. 13 shows the appearance of the tread of a typical shelly tire.

The causes which produce this condition of shelly or flaky treads may be inherent defects in the steel, such as pipe, gas cavities, slag and segregation, but are more commonly the conditions of service.

Inherent defects in the steel are confined almost exclusively to tires made from short ingots and rarely occur in tires from long ingots, for the reason that the top portion of the ingot containing the pipe, slag, segregation and gas cavities is discarded. The relation between the piping and casting defects of the ingot and the shelliness of the tire is plainly shown in Fig. 9. Usually the appearance of the tread of a shelly tire, due to inherent defects in the steel, is different from the ordinary shelliness, due to service conditions. Instead of the tread showing spots with numerous thin flakes, as in Fig. 13, there is apt to be only a single spot from which a large shallow piece has spalled out (see Fig. 14), or there may be several spots where pieces have broken out of the tread, leaving distinctly granular fractures, as in Fig. 15. An etched transverse section of this tire (see Fig. 16), shows that these defects are due to entrapped slag.

As has been stated, by far the greater number of shelly tires are

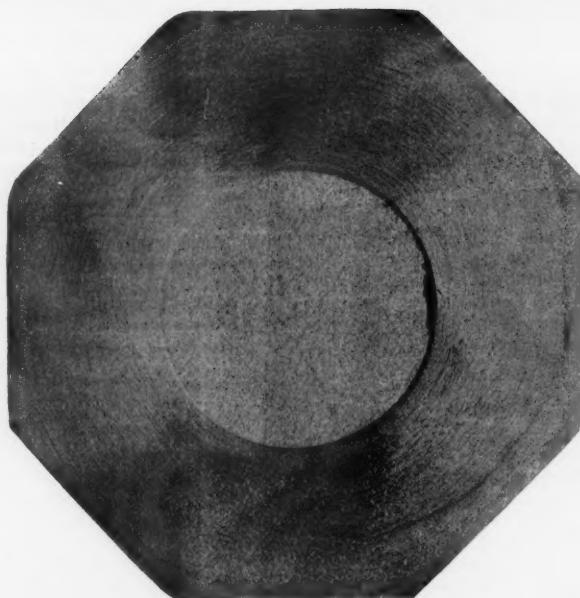


Fig. 7.

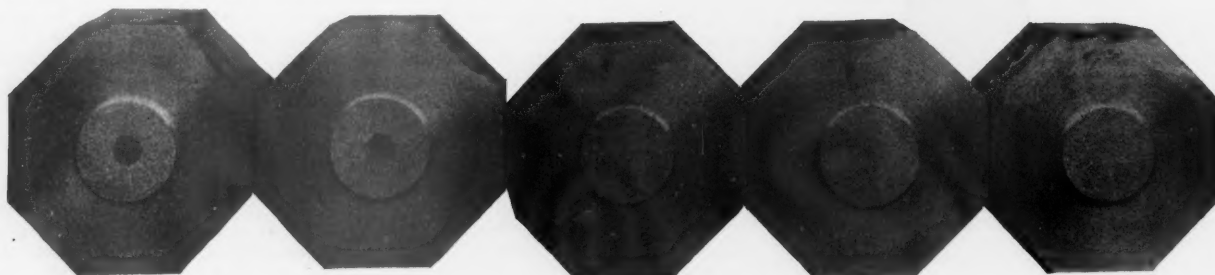


Fig. 6.

produced by conditions of service, and in the case of tires from long ingots this is practically the sole cause of this trouble. The conditions of service most prominent in causing shelliness are: Brake burns, unequal diameters of wheels upon the same axle, which may result in causing the wheel to become eccentric through slipping; eccentricity of the wheel, in its turn causing pounding. These conditions are all intensified by speed and load, but more especially by speed. It is probable that what is commonly termed "brake burn" is the chief cause producing shelliness. When the brakeshoe retards the revolution of the wheel to the extent that the distance traversed by the car exceeds that rolled by the wheel, a high degree of heat is generated locally on the tread, due to the slipping of the wheel on the rail. This results in the production of several small, hard slip spots, or brake burns on the tread within the limits of the rail contact. These small hard spots are usually covered with irregular heat cracks, which through the pounding of the wheel on the rail and joints, and under the influence of various stresses to which the

tires are subjected, tend to penetrate into the tire along the line of the resultant forces, causing the steel to break up into shells or flakes. In the case of chilled wheels the brake burns produce what is termed comby tread, and the penetration of the cracks is along the cleavage planes of the white iron crystals forming the chill and perpendicular to the tread.

Many of the hard slip spots developed disappear through the friction of the tire on the rail, or under the scouring or tooling effect of the brakeshoe, without breaking up into shelly or flaky spots. In those cases, eccentricity of the wheel results, and long, rolling flats are produced, sometimes 30 in. to 40 in. long and as much as  $\frac{1}{2}$  in. deep at the lowest point. Frequently such wheels will have two rolling flat spots. The severe punishment through pounding and slipping which eccentric wheels undergo, produces excessive and deep shelling. That the wheels become eccentric or out of round through the hard, slip spots has often been tested, by putting a pair of wheels showing such spots, but not shelled, into the lathe. It is not infrequent to find that the tool will skip for a space of 2 to 3 ft. while cutting to a depth of  $\frac{1}{16}$  in.

It is conspicuous that some of the roads having the greatest



Fig. 8.



Fig. 9.





Fig. 11.



Fig 12.



Fig. 10.



Fig. 13.

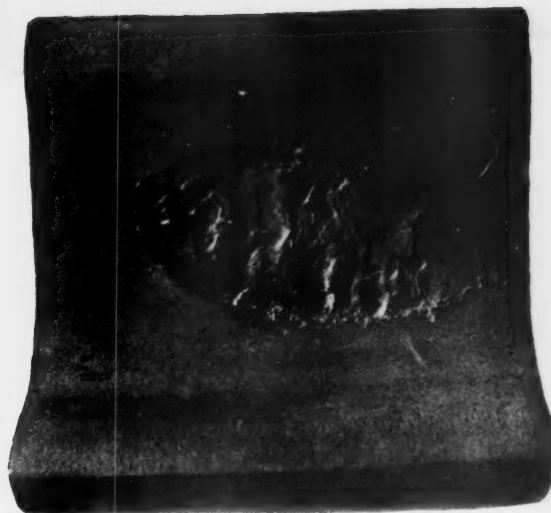


Fig. 14.



Fig. 15.

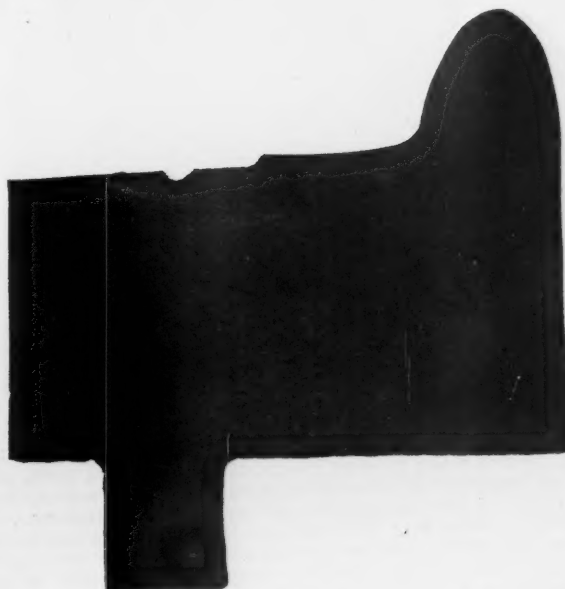


Fig. 16.

amount of trouble from shelly tread tires find the trouble most serious on low-grade divisions with infrequent brake applications, and on the heavy grade or mountainous divisions of these same roads the trouble is only slightly developed. This indicates that the long continued brake application on the heavy grades is effective in grinding off the small hard spots, or in other words the tread is worn down faster than the rate of penetration of the heat cracks in the burned or slip spot area.

The formation of the shelliness from the hard, slip spots, or

etched section of a shelly tire, and shows no inherent defects. Fig. 21 is a view of the tread of the same tire which shows an advanced stage of shelliness. Fig. 22 is a section cut from the tire as indicated on Fig. 20, and polished and magnified 40 diameters. It corresponds to the hard area shown on Fig. 18, the letters *a-b* on Fig. 22 marking the limit of depth of the hard spot. The metal between *a-b* and the tread shows a badly cracked condition, and it is through the penetration and extension of these cracks that shelliness is caused and spreads as long as the tire remains in service after this condition originates. Figs. 23 and 24 are etched sections to show the microstructure of Fig. 22 magnified 50 diameters. In both Figs. 23 and 24 the line *a-b* corresponds to *a-b* in Fig. 22. In the

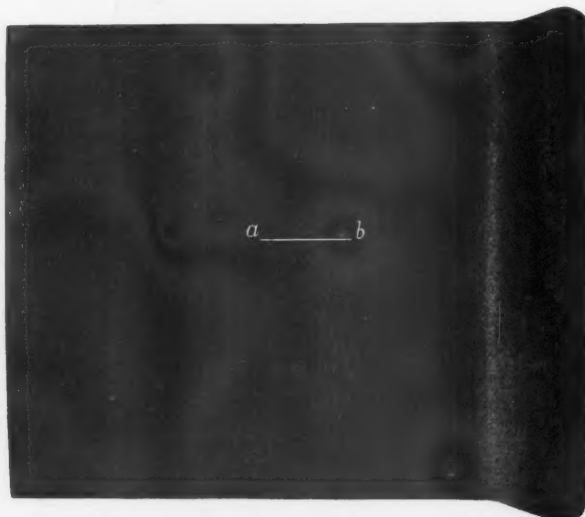


Fig. 17.

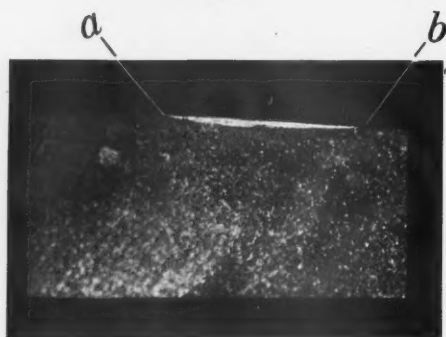


Fig. 19.



Fig. 21.

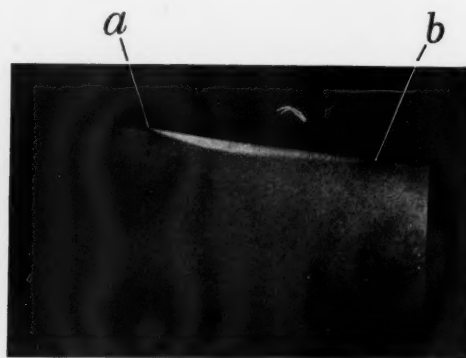


Fig. 18.

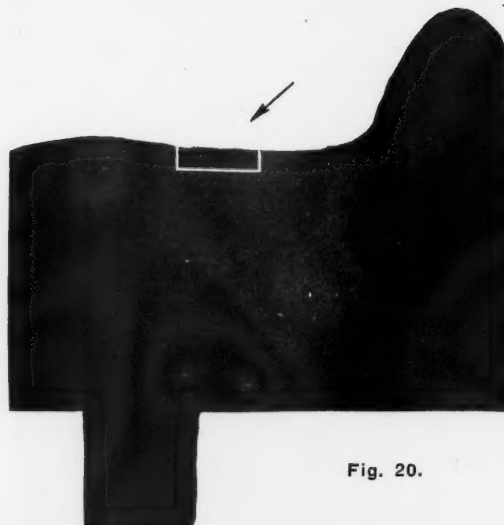


Fig. 20.

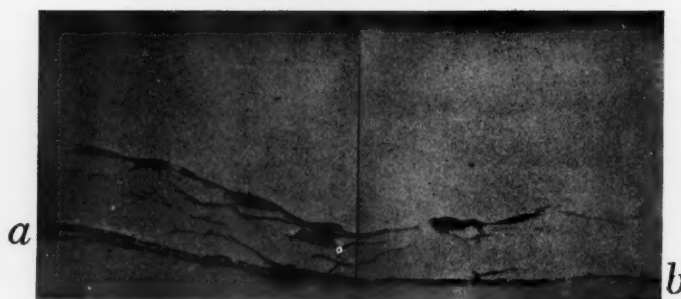


Fig. 22.

brake-burned areas is very well shown by the illustrations. Fig. 17 is a view of a tire showing several of the brake-burn spots, one of which has started to form a shelly spot. Fig. 18 is a section through this spot on line *a-b* polished and magnified two diameters. The white area *a-b* is very hard and might be likened to a case-hardened spot. Fig. 19 is a section through another spot on the same tire, polished and slightly etched to emphasize the contrast. It is the breaking up of these hard areas that originates the detailed cracks which penetrate into the tire and cause shelliness. Fig. 20 is an

case of Fig. 23, which is located outside of the cracked or shattered area, cleavage has not taken place along this line as is the case in Fig. 24. The microstructure of the metal between the line *a-b* and the tread is distorted, but there is no tendency indicated toward separation of the micrograins along the lines of ferrite. This would be the case if the shelliness was due to microscopical particles or filaments of entrapped slag, as these usually occur in the ferrite. The microstructure below the line *a-b* is entirely unaltered and the line of demarkation is very sharp, cutting as it often does through the micrograins and separating them into distorted and undistorted portions. Figs. 25 and 26 illustrate clearly how these cracks extend and multiply. Fig. 25 is a polished but unetched specimen from a



tire in the initial stages of shelling, magnified 35 diameters. Fig. 26 is a portion of the same specimen, etched and magnified 50 diameters. There is no evidence of any inherent defects. Fig. 27 is a longitudinal section of a shelly tire and gives a good idea of the manner in which the shell cracks penetrate into and break up the steel. Neither this section nor the transverse section, Fig. 28, shows any inherent defects.

It is notable that driving tires are practically free from shelling, which certainly would not be the case if the shelliness was largely the result of inherent defects in the steel, improper treatment during manufacture, or defects of workmanship. The few cases of driving

while in the case of many trailing wheels and wheels under large capacity tenders, the wheel load is as great and is carried on a smaller area of rail surface.

The liability to shell is far greater in the case of tender wheels under heavy tanks in through passenger service than any other



Fig. 23.

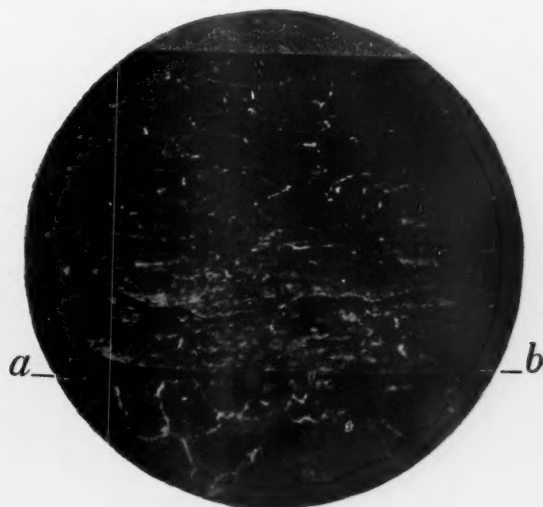


Fig. 24.



Fig. 25.

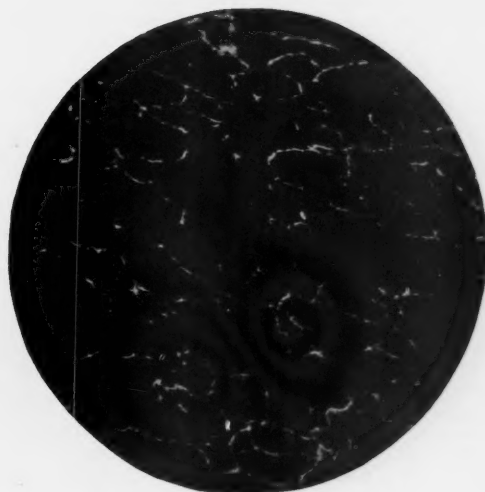


Fig. 26.

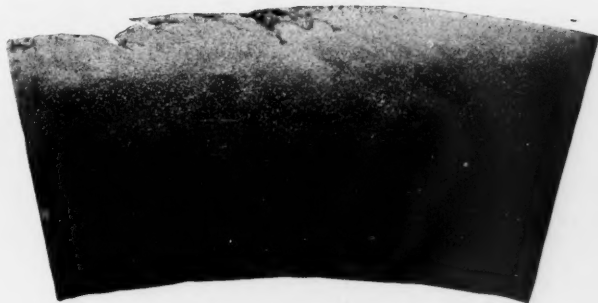


Fig. 27.

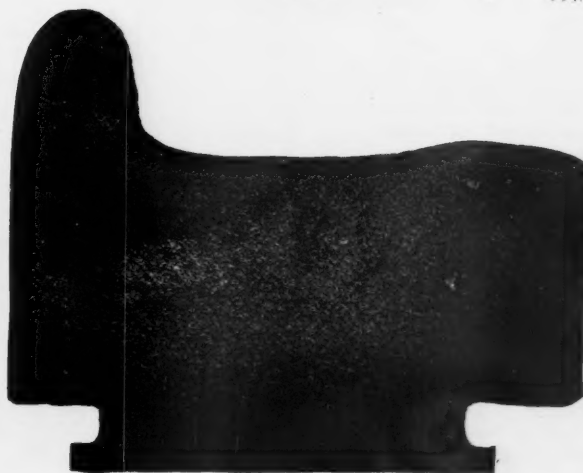


Fig. 28.

tires which have been examined were due to inherent defects in the steel. Brake burns and slip spots are apparent on the tread of driving tires, but the rate of penetration of the cracks, owing to their greater diameter and flatness of arc, is slow, and consequently their removal by brake wear is quite certain. Furthermore, the service conditions of driving tires are less severe than those of tender, trailer and coach wheels. The number of revolutions is less, the area presented to the rail is greater, and the brake application is more effective. The static wheel load for driving wheels of modern high-class passenger locomotives averages about 22,000 lbs. per wheel,

class of equipment. The service conditions of the tender wheels are the hardest of all the wheels, owing to the constantly shifting and varying load carried. The varying load not only affects the percentage of brake application, giving a variation in the retarding effect of the brakeshoe on the wheels, and increases the liability to

brake burn spots, but also causes the tender to ride rough and to pound the wheels. This is on account of the stiffness of the springs, which are designed for full load, but carry a light load much of the time in service. There is a marked increase in the number of shelly tires during the winter season, which is natural, as all conditions of operation are more severe. In general the wheels under tenders do not receive the same attention as wheels under coaches. The inspection may be as close, but it has been observed that those roads having the most trouble from shelly wheels keep tender wheels in service that they would not tolerate under coaches. This observation is confined by the records of the wheel lathes which show an average of about twice as much metal turned off the tender wheels as from the coach wheels.

Trailer wheels probably rank next to tender wheels in tendency to develop shelliness. Most of the cases of shelly trailer wheels observed have been under engines in through passenger service, and this wheel load has averaged 20,000 lbs. and upward per wheel. This great load, with the tendency of the trailer wheels to "pick up" on the application of the brakes and develop brake burn spots is doubtless the reason why they have given so much trouble from shelliness.

Coach and engine truck wheels come next in order. Most of the shelly coach wheels have been under heavy cars in through passenger service. The majority of cases have been distinctly traceable to brake burns.

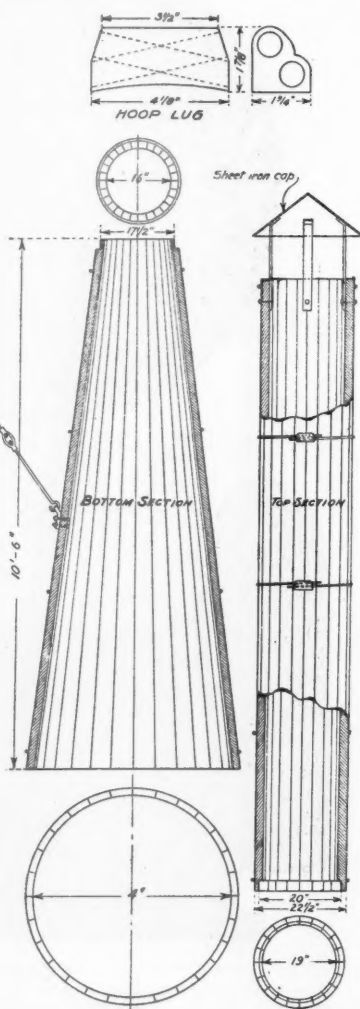
(To be concluded.)

#### Smoke-Jacks for Engine Houses.\*

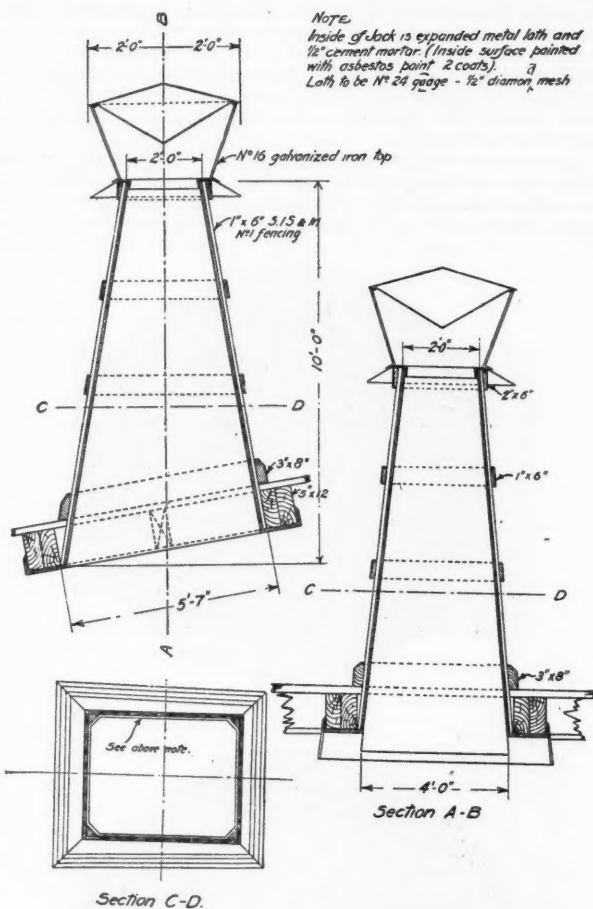
The committee is as unable, after nine years have elapsed, as was the committee which reported in 1898, to say which is the best form and best material for engine house jacks. It is safe to say, however, that some of the compositions of asbestos that were new at that time have proved to be failures, and railroad men are as eager as ever at the present time to find a substitute for the many kinds of cumbersome and expensive jacks now in use, which will be reasonably cheap in first cost and easy to maintain in service.

Jacks are made in all conceivable shapes, sizes and forms to meet certain requirements and conditions in the different kinds of engine houses, but generally they are classed as two distinctive types, the one having the telescopic drop section fitting down closely over the stack of the locomotive after it has been placed, and the other having a large flaring section which is stationary, under which the engine may be placed without accuracy, and is larger proportioned in every way than the first-named type. The latter-named style answers to a greater extent for ventilation on account of its larger dimensions and must necessarily allow the escape of more heat in cold weather unless special arrangements are made to avoid it.

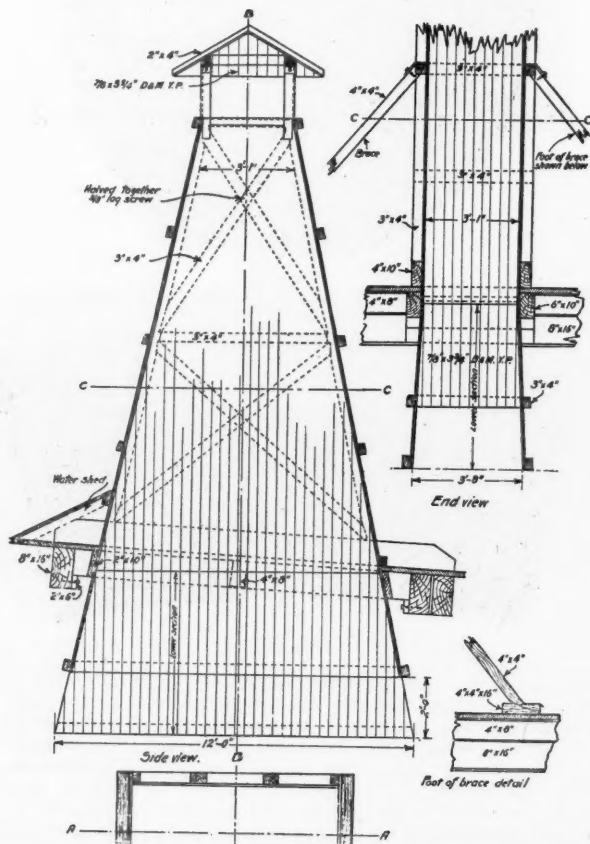
It is well known that the various forms of iron and steel when used for this purpose decompose very rapidly, cast-iron being bet-



Chicago & Eastern Illinois Wooden Smoke-Jack. Cost in Place, \$20 to \$25.



Northern Pacific Wooden Smoke-Jack. Cost in Place, \$30 to \$40.



Erie Wooden Smoke-Jack. Cost About \$100.

\*From a committee report to the Milwaukee convention of the Superintendents of Bridges and Buildings.





upon a roof casting and surmounted by a sheet metal cap and having either a telescopic section or a stationary hood under the roof, made in either case of iron. This lower section and the cap are subjected to rapid disintegration and have to be renewed frequently.

Wood seems to withstand the action of the gases better than metal and it has been successfully used by some roads for many years without any trouble whatever, while other roads experienced loss from fire and many do not use them for fear of similar results.

Attention is directed to a statement made on page 184 of the Eighth Annual Proceedings, wherein a member stated that they had been using wooden jacks for 20 years on every engine house but one (which was equipped with cast-iron), and he was sorry that the one exception did not have wooden jacks. He further stated that they use the stationary style (without drop section), and that they did not use any sort of protection against fire in the way of sanding or fireproof paints, being careful in the use of them until they became saturated or coated inside from natural use. Others have used the wooden jacks successfully for years. The committee would therefore earnestly recommend a careful investigation of wooden jacks to ascertain if possible whether the fault has not been in the style or methods of construction, and misuse where failures have occurred, rather than in the kind of material. It is quite certain that a wooden jack fitting closely over the mouth of the stack, or nearly so, would be more likely to cause trouble than a large-mouthed jack, where plenty of air passes through with the smoke and gases.

Various compositions of asbestos, cement, etc., have been extensively experimented with in recent years for this purpose, many of which proved to be short lived, and none to date have stood the test sufficiently long to prove that they are worth the price which is charged for them, regardless of the fact that they may be guaranteed by the manufacturers for a specified term of years.

The report is signed by M. J. Flynn, C. A. Lichty, D. L. McKee and A. F. Miller.

#### Efficient Operation on the New York Central.

The possibilities in handling dense traffic with the aid of block signals are well shown by the following record at three block stations on the Hudson division of the New York Central for the 24 hours from midnight to midnight, October 18 and 19:

Sixty-eight westbound and 71 eastbound trains passed block station 58, which is just south of Poughkeepsie—a train movement for each 21 minutes of the 24 hours.

At block station 31, just south of Croton, there were 96 westbound and 98 eastbound trains—one movement every 15 minutes of the 24 hours.

At block station 9, between Spuyten Duyvil and Yonkers, there were 107 eastbound and 104 westbound trains—a train movement every 13 minutes of the 24 hours.

Of these trains there were 22 eastbound and 20 westbound through freights, which handled 2,028 cars; in addition to this there were six work trains in service south of Poughkeepsie.

As a particular indication of the density of the traffic: At one period of the day seven trains passed block station 9 westbound in 24 minutes and eight trains eastbound passed in 33 minutes; a train an average of each 4½ minutes eastbound and 3¼ minutes westbound.

The efficiency is reflected in that two through eastbound passenger trains were delayed a total of 12 minutes; two eastbound locals a total of 39 minutes; one westbound local 12 minutes, and two westbound through passenger trains a total of 28 minutes, one of which overcame the delay and arrived at Albany on time.

#### Report on Signal Lamps—Railway Signal Association.\*

Your committee concurs in the reports made at the annual meetings of 1905 and 1906. It would be desirable to arrive at definite standards of dimensions, so that the present confusion of lamps and brackets could be eliminated. There are many variations in the vital measurements, which affect their fitting properly, which are just enough off to prevent interchangeability, and yet are not so radical but that they might be modified to a common standard. With very few exceptions, 5 in. and 5½ in. are the sizes of lenses everywhere.

Experience seems to show that the white bullseye, which was formerly used so generally as a back-light, is not now deemed satisfactory, and we find its use is being rapidly dispensed with; in its place plain ground glass is used, which serves every purpose, and eliminates the possibility of a confusion of signals.

In previous annual reports the Lamp Committee has spoken of the prism glass reflector. It is meeting with considerable favor, due to its ability for increasing the intensity of the light, and there being no deterioration in its reflecting powers from continuous

service, as is found in metal reflectors. This reflector is, of course, applicable only to the one-lens lamps.

It would be advisable to continue this committee for another year, to study the question of proper maintenance of signal lamps. By a more thorough education in this direction, general efficiency will be improved. Some roads have drawn up rules for the care and handling of signal lamps, and their experience would be of material assistance in compiling a complete set of rules.

Harry Hobson, chairman; C. S. Stephens, C. J. Cannon, F. E. Wass, Chas. Geary.

#### The 1907 Grain Crop.

The following estimates are taken from the *Journal of Commerce*:

	Indicated Harvest for 1907.		Harvest of 1906	
	October, 1907— Bushels.	Acres.	October, 1906— Bushels.	Acres.
Winter wheat*	409,500,000	28,132,000	492,888,000	29,599,961
Spring wheat	216,067,000	16,464,000	242,372,966	17,705,868
Total wheat	625,567,000	44,596,000	735,260,966	47,285,829
Total corn	2,491,715,000	98,099,000	2,927,416,001	96,737,581
Total oats	741,521,000	31,491,000	964,904,522	30,958,768
Total barley	147,192,000	6,152,000	178,916,484	6,323,757

The official preliminary estimates of yields per acre compare as follows:

	Oct., 1907	Oct., 1906	Oct., 1905	Oct., 1904
Winter wheat	*14.6	16.7	14.3	12.3
Spring wheat	13.1	13.7	14.7	12.7
Oats	23.5	31.2	33.9	32.1
Barley	23.9	28.3	26.7	27.2
Rye	16.4	17.0	16.6	15.2

\*August report; nothing later.

The condition of corn on October 1 was 78, as compared with 80.2 last month, 90.1 on October 1, 1906, 89.2 at the corresponding day in 1905 and a 10-year average of 79.6.

The following table shows for each of the 25 principal corn states the condition on October 1 in each of the last three years and that on Sept. 1, 1907, with the 10-year averages:

States.	Oct. 1, 1907.	Sept. 1, 1907.	Oct. 1, 1906.	Oct. 1, 1905.	Ten-year average.
Illinois	86	86	87	96	84
Iowa	70	76	97	90	82
Nebraska	69	75	90	95	67
Missouri	84	86	90	94	80
Texas	78	80	76	76	73
Kansas	67	72	85	87	69
Indiana	84	84	96	99	86
Georgia	92	92	89	86	82
Ohio	78	77	99	91	84
Kentucky	78	87	90	95	82
Tennessee	86	86	94	84	78
Alabama	85	87	88	84	79
North Carolina	89	92	84	83	82
Arkansas	60	62	93	79	78
Mississippi	74	77	88	71	76
Indian Territory	68	72	93	93	87
Oklahoma	66	70	95	83	72
South Carolina	93	93	81	75	77
South Dakota	72	70	93	95	82
Virginia	86	86	92	97	87
Louisiana	70	75	84	69	81
Minnesota	73	76	95	95	85
Michigan	76	78	95	89	84
Wisconsin	77	80	98	96	87
Pennsylvania	75	70	95	96	86
Total for U. S.	78.0	80.2	90.1	89.2	79.6

#### Corn Harvest Indications, with Comparisons.

Condition	Oct. 1, 1907.	Sept. 1, '07.	Oct. 1, 1906.
Indicated yield, pr acre	78.0	80.2	90.1
Area, acres	25.4	25.9	29.1
Indicated yield, bush.	98,099,000	98,099,000	95,535,050
Estimated crop, 1907	2,491,715,000	2,540,000,000	2,780,000,000
Actual Corn Harvest.			
1906	96,737,581	2,927,416,001	2,666,440,279
1905	94,011,369	2,707,993,510	1,924,184,660
1904	92,231,581	2,467,480,934	1,902,967,933
1903	88,091,993	2,244,176,925	1,896,810,271
1902	94,043,613	2,523,648,312	1,895,820,753
1901	91,349,928	2,522,519,891	1,894,625,826
1900	83,320,872	2,105,102,516	

#### Foreign Railroad Notes.

In Munich there has been a strike of teamsters, including those of the firms which have contracts with the State Railroads to deliver freight to consignees from the stations. The authorities gathered as many employees as possible, chiefly trackmen, to drive the teams, disclaiming any intention to affect the result of the strike, but claiming that the railroads must make every possible effort to fulfil their contract to deliver freight to consignees.

The length of the completed railroads in French Indo-China, which have for years been reported to be 1,491 miles in the statistics of the railroads of the world, was really at the close of 1906 only 940 miles, according to the French Colonial Minister. All lines but one earn more than their expenses. They have cost about \$25,000,000. The Yunnan Railroad in China, which is a French enterprise connecting with a colonial railroad, has so far cost \$18,000,000 for 292 miles completed, and has met with serious obstacles.

\*Condensed.



# GENERAL NEWS SECTION

## NOTES.

Los Angeles papers report the establishment in that city of schools of telegraphy by both the Atchison and the Southern Pacific companies.

The Western Union Telegraph Co., which has been paying operators more than double pay since the strike of a few weeks ago, on October 19 restored the former conditions; but announced that increased rates of regular pay would soon be promulgated.

The Texas Railroad Commission has modified its order, recently issued, requiring railroads to report accidents by telegraph, and now directs that the reports be sent by mail. This change, it is said, is due to the fact that the railroads have sent the telegrams collect. The commission had no appropriation for making the payments.

The Wabash and the Chicago & Alton have arranged to jointly operate as double track their single-track lines from Mexico, Mo., to Clark, 26 miles. The Alton tracks will be used for all east-bound trains of both roads, while the trains going west will go over the Wabash. Automobiles will be run between the two stations at Sturgeon.

In competing for eastbound steamship business, the Erie, it is said, has filed a rate of \$10 for second class tickets from Chicago to New York. This rate, which is a cut of \$6.75, will become effective November 20 and will be in effect at least 30 days. A special meeting of the Central Passenger Association has been called for October 25 to decide what action other trunk lines will take.

The Railroad Commission of Canada has sent to all the railroads a circular reminding them that 30 per cent. of their engines and cars have defective safety appliances, the inspectors of the Commission having lately made extensive examinations of cars. The Commission expresses the hope that the railroads will correct these defects and thus obviate the necessity of further action by the Board.

At New Durham, N. J., this week 10 freight conductors and brakemen of the New York Central (West Shore) were arrested and held in \$1,000 bail each, on charges of larceny. Detectives of the road, disguised as tramps, hid in the yard where considerable quantities of silks and other valuable freight had been stolen from cars, and, after watching three or four nights, found the evidence for which they had been looking.

The Union Pacific road is going to resume the practice of allowing the extension of the limits of round-trip tickets in case of the sickness of the holder, on the presentation of a physician's certificate to that effect. The Interstate Commerce Commission has ruled against the practice, but the U. P. holds that where the privilege is extended to all alike under similar circumstances, and the practice is set forth in the tariffs, it is perfectly legal.

Prof. Henry C. Adams, who is preparing the regulations under which the Interstate Commerce Commission is to keep its records of railroad operations and accounts, has invited to advise him in his work President F. A. Delano, of the Wabash; Vice-President Julius Kruttschnitt, of the Southern Pacific, and Theodore Hinchman, a Consulting Engineer, of Detroit. These gentlemen will give their attention more particularly to the question of depreciation of property and other subjects on which Professor Adams desires the results of railroad experience.

On the occasion of the convention of the American Association of General Passenger and Ticket Agents, in Washington last week, a committee conferred with the Interstate Commerce Commission, with a view to a possible complaint to test the legality of the practice of employing ticket agents on commission. It is said that some railroads now employ doctors, dentists, hotel clerks and liquor men to sell tickets; and that in these cases the purchaser and the agent often divide the commission allowed by the roads on such sales, which, of course, constitutes a discrimination in passenger rates.

No bill of lading can be drafted which will meet the approval of the shipper, the railroad and the banker, but the Interstate Commerce Commission, following its hearings on the subject, intimates that it will undertake the task of formulating and promulgating a uniform bill in the not distant future. As the basis of its work in this direction it will take the bill prepared by the special committee representing the three interests involved. The criticisms passed on this bill during the hearings will be taken into consideration, and the Commission has invited suggestions in writing, such suggestions to be in before November 1. From the position taken by some of the railroads at the hearing, it is a foregone conclusion that the Commission's bill of lading will be assailed at many points. The authority of the Commission to

promulgate the bill will be questioned, and its character as a negotiable instrument will be tested in the courts. The bankers, moreover, declare that no matter what the Commission may say as to the negotiability of a bill of lading, this quality cannot be given to the instrument without authority of law.

The extensive installation of block signals on the Union Pacific and Southern Pacific within the past three years is well known. At the present time and with the completion of additional installations already authorized the two systems will have a total of 5,786. The Union Pacific has in operation, equipped with automatic signals, 469 miles of single track and 244 miles of double track. An additional 176 miles of double track and 197 miles of single track will soon be put into service. More than 300 distant switch signals, protecting the movement of trains approaching 158 stations and sidings on the main line of the Kansas and Colorado divisions, have also been put in place.

In consequence of the reduced rates now prevailing in the state of Pennsylvania the Baltimore & Ohio has withdrawn the Washington stop-over privilege on tickets sold from Pittsburgh to Philadelphia. The rate between the cities named has had to be reduced to \$6.98, which is a dollar less than the regular fare from Pittsburgh to Washington. Passengers for Washington are buying Philadelphia tickets and throwing away the Washington-Philadelphia portion. Those with baggage cannot take advantage of this, as the baggage has to be checked through to Philadelphia. On through tickets to Baltimore, New York and other places not in the state of Pennsylvania the Washington stop-over is continued.

Press despatches from Montgomery, Ala., say that, following a conference between the President of the Southern Railway and the Governor of Alabama, that road is to adopt, on December 1, throughout Alabama, a general passenger rate of 2½ cents a mile, and freight tariffs based on the rates charged in Georgia; and that the lawsuits now pending to test the constitutionality of the 2-cent fares and other low rates ordered by the Alabama legislature, are to be withdrawn. In North Carolina it is reported that a somewhat similar compromise will soon be agreed upon between the Governor and the officers of the principal railroads. The lawsuits are to be dismissed and the railroads are to adopt and use, until the next session of the legislature, the low rates ordered by the state.

## Sunday Law in Massachusetts.

The following law, providing for one day's rest in seven, is now in force in Massachusetts:

Section 1.—Except in cases of emergency or except at the request of the employee, it shall not be lawful for any person, partnership, association or corporation to require an employee engaged in any commercial occupation, or in the work of any industrial process, or in the work of transportation or communication, to do on the Lord's day the usual work of his occupation, unless such employee is allowed during the six days next ensuing 24 consecutive hours without labor.

Section 2.—This act shall not be construed as authorizing any work on the Lord's day not now authorized by law; nor as applying to farm or personal service, to druggists, to watchmen, to superintendents or managers, to janitors, or to persons engaged in the transportation, sale or delivery of milk, food or newspapers. \* \* \* Penalty \$50.

## Economical Loading of Cotton.

"The economic necessity which demanded cars of increased carrying capacity, demands that the increased capacity be utilized. The car shortage is not due so much to a real deficiency in the number of cars as it is to the fact that the cars in service are not being used to the best advantage. With careful loading 51 uniform bales of uncompressed cotton can be loaded in a standard box car, and an average of 42 bales can probably be obtained. If, in loading uncompressed cotton for its initial movement to the compress this can be accomplished, the efficiency of equipment will be increased approximately 70 per cent. over present average practice (25 bales).

"For many years the unit of loading compressed cotton has been 50 bales to the car, because of the practice in selling cotton to use a unit of 100 bales, and because the standard car when this unit was adopted was 34 ft. in length. The present standard car is 36 ft. long, and it is easy to load 60 bales, as now compressed, on the floor. Fifteen additional bales can be placed on top so that it is now easy to load 75 bales of compressed cotton in a box car of the present standard, and the railroads are trying to secure such loading.

"Some of the compresses have contracted to make 75 bales the minimum load. We hope to make contracts with all of them on this basis. Many of the southern spinners have agreed to co-operate

by ordering their shipments in units of 75 bales. We are anxious that the New England spinners should adopt the same plan. This matter is of too large importance to be subservient to the unit rule of the New York Cotton Exchange."—*L. Green*, Freight Traffic Manager, Southern Railway.

#### Harrington Staybolt Threading and Reducing Machine.

The experience of locomotive builders and railroads has proved the superior advantages of using boiler staybolts which have been turned to a reduced diameter at the center over the old method of using bolts threaded for their entire length. When the center portion of the staybolt is reduced, a smooth surface comes in contact with the water and the strains due to expansion and contraction of the firebox sheets have less tendency to break off the stays. The Harrington staybolt threading and reducing machine shown herewith cuts the threads accurately and automatically reduces the center of staybolts to any desired form in one operation. The machine has six spindles and will thread staybolts of any length up to 30 in. They can be inserted and removed while the machine is running. The capacity of the six-spindle machine at a spindle speed of 80 r.p.m. is 225 staybolts per hour,  $7\frac{1}{2}$  in. long and 12 threads per inch, threaded and reduced in the center. For a working day of 10 hours, the average output would be 2,250.

The heads which carry the dies and reducing tools are each mounted on two upright guide bars. They are fed downward by lead screws to correct any inaccuracy of the threads cut by the dies. The threading dies and reducing tools are both automatically thrown in and out, and the split nut engaging the lead screw is thrown open at the bottom of the cut. The head is quickly returned by a strap over a pulley lift and requires no appreciable effort by the operator. The threading dies have four cutters of high-speed steel. They are adjustable and of the quick opening and closing type. There are two reducing tools mounted in each head and acting oppositely to each other to prevent side strain. They are both controlled by one former, the shape of which is exactly similar to the desired reduction in the stay rod. It is fastened to the square guide bar by bolts in T-slots and is adjustable the entire length. The spindles and lead screws are controlled by two horizontal shafts underneath the bed. The change feed gearing is at the outside end and easily accessible.

The machine is built either for belt or motor drive, as may be desired. The cutting oil is carried from the large reservoir in the tank overhead by a geared pump and is fed directly onto the work in a stream. With each machine is provided one set of high-speed steel threading dies per spindle for any one pitch, one pair of reducing tools and one former per each spindle, and the necessary change feed gears for 10, 11 and 12 threads per inch. The floor space occupied is 4 ft. in width and 11 ft. 6 in. long for belt, or 13 ft. 6 in. long for motor drive. The height to top of pulley on lift shaft is 11 ft.

The machine is made by Edward Harrington, Son & Co., Inc., Philadelphia, Pa.

#### Fuel Department on the Santa Fe.

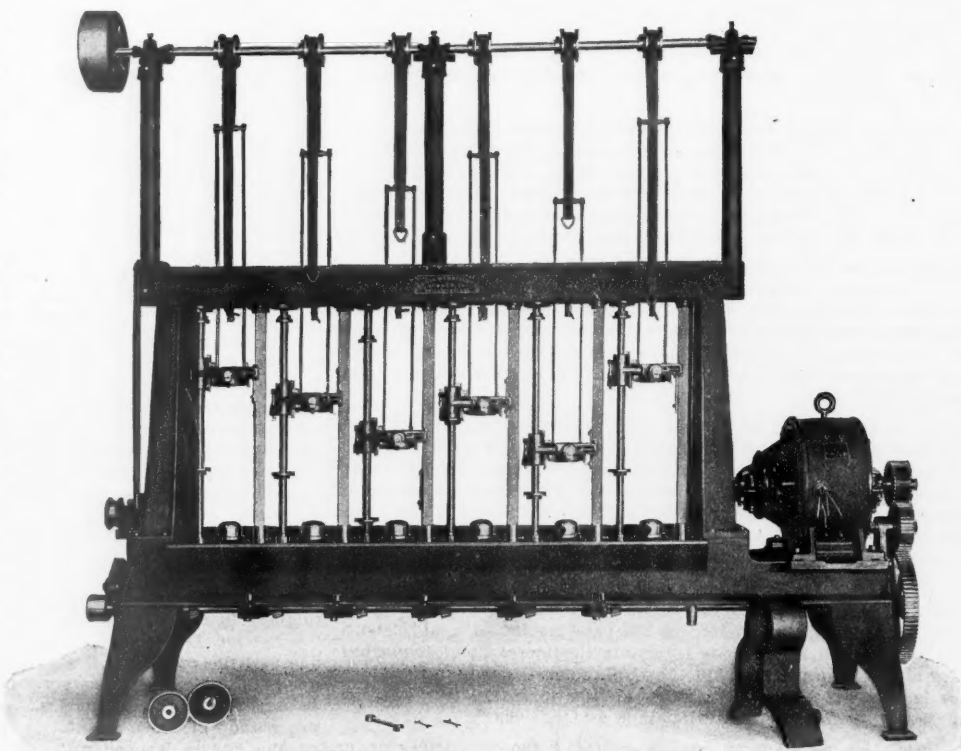
For the purpose of maintaining a more complete supervision of the receipts, issues, distribution and accounting for fuel the Atchison, Topeka & Santa Fe has established a fuel department, with C. F. Ludington as Chief Fuel Supervisor, with headquarters at Topeka, and H. E. Westcott, Fuel Supervisor for the Coast Lines, with headquarters at San Bernardino. These men will appoint and be responsible for the work of all employees engaged exclusively in receiving, storing, delivering and accounting for all fuel. The fuel department will receive and compile all reports from fuel stations, making such reports to the audit and other departments as may be

necessary. It is the intention to relieve agents and others in the transportation and mechanical departments, as fast as practicable, from responsibility in fuel department matters.

#### Per Diem on the New Haven.

The disagreement between the New York, New Haven & Hartford and its western connections, concerning rates for car service, remains unsettled. Elaborate statements on both sides of the controversy have been published but little or nothing is brought out that is new. On behalf of the New Haven, it is declared that the rental should not be the same for an old \$300 car as for a new one worth \$1,200; that the average gross receipts per carload on the New Haven line for freight received from the West are \$18; and that the average freight car interchanged is worth about \$475, making the annual rental 40 per cent. of the value of the car.

On the other hand, someone representing the American Railway Association says that the New Haven is little if any worse off



Harrington Staybolt Threading and Reducing Machine.

than the Reading, the Central of New Jersey, the Long Island and other eastern roads; that at the former rates for freight cars the New Haven has always had an advantage over the other roads; that a scale of different rates for different sizes of cars would afford opportunity for juggling in interchange; that the New Haven is already receiving a very much larger share of the through revenue on through shipments than its mileage entitles it to; that the "four days free" law of Connecticut is not so important as it seems, because the average consignee unloads cars in  $2\frac{1}{2}$  days, which is only 25 per cent. longer than in other states, and no longer than in Virginia; that the New Haven might defy the Connecticut law on interstate shipments if it saw fit but from motives of policy does not do so. The latest demand of the New Haven is for equal interchange and \$1 per car reclaim. This proposition has been declined by the connecting roads.

Following this statement an officer of the New Haven has issued a rejoinder in which he says:

The New Haven road is a great switching yard for its trunk line connections. It does not receive for the character of business it does a large division of the rates—no more of a division than would any other road similarly situated and obliged to furnish the enormously expensive terminals that the New Haven does. The average detention of a freight car in the territory served by the New Haven is approximately nine days, which, at 50 cents a day, averages a charge of about 30 per cent. of the gross receipts of the New Haven for doing the business. The New Haven road knows of no reason why it should arbitrate a matter of this kind, believing the best arbitration in the world is that of the courts. It has no objection to arbitration beyond the fact that it is generally a



compromise. \* \* \* It would be a relief to the New Haven road if it could go out of the all-rail coal business, but that would inflict loss upon individuals. It is true that the law of Connecticut may not be applicable to interstate shipments, but it was intended by the legislature that it should apply to all shipments, and it would be impolitic for the New Haven to try to accomplish by indirection an evasion of the will of the people of the state. The New Haven has ordered a large equipment of freight cars, and when well equipped its policy will be to require the use of its own equipment on shipments to and from its own stations, and not to permit the nondescript equipment now being delivered it by its connections to remain in the service, 50 per cent. of which is worth not to exceed one-third of the average of what it will be prepared to furnish upon request. It is unfortunate that the roads should be unable to agree among themselves. It is not going to be productive of benefit to the New Haven to even win in such a controversy; but an indisposition to be fair on the part of its connections forces its hand to a tribunal wherein neither party will have any advantage and where it is willing to rest its case.



"Say, Doc, if I have to have a doctor, I'd rather trust to you than to that bunch over there."

—McCutcheon in *Chicago Daily Tribune*.

#### Deaths from Concrete Collapses.

A New York press agency reports that in the half year ending Dec. 31, 1906, 31 persons were killed by collapses of concrete buildings in the United States. The accidents occurred at South Framingham, Mass.; Elyria, Ohio; Mineola, N. Y.; Long Beach, Cal., and Rochester, N. Y. This year two persons were killed in the failure of a concrete building in Philadelphia. In every case, it is said, the builder claimed that he had taken all known precautions against collapse.

#### The "Montreal" Street Car.

The New York City Railway has ordered 155 new cars to be used on its Madison and Fourth avenue (surface) line, which are similar to those in use for the last two years in Montreal, with entrances and exits so arranged that fares can be collected as the passengers enter, and the company promises that these cars shall be put in service early in December. The new cars are 48 ft. long and 32 ft. long over the body, seating 36 passengers. Each car has four motors and air-brakes. The rear platform, which is 7 ft. 6 in. long, is divided by a railing into two parts, one for passengers entering and the other for passengers going out, and the entrance portion will hold 20 passengers, so that that number can be admitted and the car started and the fares then collected, as the passengers pass into the car, during its passage to the next stopping place. The platforms are enclosed or vestibuled. The conductor will ordinarily stand on the rear platform, there being no necessity for him to go inside the car to collect fares. Push-buttons are provided between each two windows, by which passengers can signal to have the car stopped. Passengers may leave the car at the front end, but all must enter at the rear. The cars cost \$7,200 each.

It is said that since the Montreal lines have been fully equipped with cars of the new style passenger receipts have increased 27 per

cent. and more in single months, as compared with the business under old conditions, and some of the increases per car per hour have been as high as 50 per cent. At the same time cars are averaging 10 per cent. better speed, and there is a striking decrease in platform accidents, in consequence of the conductor's better control of the entrance and exit of passengers.

#### Report on the Meat Industry.

A capital of \$10,625,000,000 is directly concerned in raising of meat animals and their slaughtering and packing, according to a report on meat supply issued by the Department of Agriculture. This amount is five-sixths as large as all capital invested in manufacturing in 1904. Seven-eighths of the meat and meat products was consumed within this country. The stock of meat animals has increased since 1840, but has not kept pace with the increase in the population.

The welfare of the raisers of meat animals and of the slaughterers and packers is dependent upon finding foreign markets for the surplus of the production of meat above the home consumption. There was a total of 93,502,000 meat animals slaughtered and exported in 1900, of which the exported live animals numbered 276,000. The dressed weight of the 93,502,000 meat animals constituting the meat supply of 1900 was 16,549,921,000 lbs., of which 14,116,886,000 lbs. entered into domestic consumption, lard being included with the dressed weight of pork.

The report adds: "That meat consumption per capita has declined in this country since 1840 is plainly indicated. There is some ground for believing that at that time meat constituted about one-half of the national dietary in terms of total nutritive units consumed, whereas now it constitutes about one-third."

How important meat is in the diet of different countries is shown in the following meat consumption per capita in 1904 in dressed weight: United States, 185 lbs.; United Kingdom, 121; Australia, 263; New Zealand, 212; Cuba, 124; France, 79; Belgium, 70; Denmark, 76; Sweden, 62; Italy, 46.

#### 1908 M. C. B. and M. M. Conventions.

At a meeting of the Executive Committees of the Master Car Builders' and American Railway Master Mechanics' Associations at the Hotel Belmont, New York City, October 21, it was decided to hold the 1908 annual conventions of those Associations at Atlantic City, N. J. The Master Car Builders' Association will meet June 17, 18 and 19, and the American Railway Master Mechanics' Association June 22, 23 and 24. The headquarters of the Associations will be at the Marlborough-Blenheim. The same special rates made by certain of the Atlantic City hotels last June will apply for the 1908 conventions. The meetings of the associations as well as the exhibits, excepting track exhibits, will be on Young's "Million Dollar" Pier. The track exhibits will be placed not more than four blocks from the pier. The same uniform decorative scheme that was so successful at this year's conventions, with some modifications to suit the new pier, will be provided. Nearly all of the exhibits will be under cover, 60,000 sq. ft. net (exclusive of aisles) of space having been allotted for exhibits. In June last the exhibitors on the Steel Pier used about 55,000 sq. ft., exclusive of aisles. The charge to exhibitors in June next for space, including building of booths, crex matting for the floors, enamel letters for signs, and telephone service, will be not more than 33 cents a square foot as against 50 cents a square foot paid for space on the Steel Pier in June last.

#### Troubles Not Exactly Like Ours.

The auditing department of the Mexican Central is ferreting out dishonest employees. Ticket sellers overcharge passengers, and several arrests have been made, the first being of the ticket agent at Juarez. The auditing department has now succeeded in having guards put on all trains, save a very few, and an armed force is always handy in case of need to protect the baggage of passengers at stops when the passengers may desire to leave the car.—*Mexican Herald*.

#### INTERSTATE COMMERCE COMMISSION RULINGS.

##### Interstate Commission vs. Georgia Commission.

In an opinion by Chairman Knapp the Commission has announced its decision in the case of the Paper Mills Company, of Baltimore, Md., against the Pennsylvania Railroad and others. The defendants refused to apply carload rates to the transportation of paper bags and wrapping paper in mixed carloads in southern classification territory. The Commission held that this is not unlawful.

It appeared that complainants, as compared with their Atlanta competitors, are handicapped where they undertake to sell in the state of Georgia. So far as this results from differences in location

between the different manufacturing plants it is natural and therefore legitimate; but the positions of the competing parties would be reversed if the Atlanta concerns should undertake to make sales in the vicinity of Baltimore. The handicap results in large degree from a rule of the railroad commission of Georgia requiring defendants and other carriers to apply their carload rates to the intrastate transportation of wrapping paper and paper bags in mixed carloads. The Commission decided that a like rule should not be required as to interstate shipments unless, in view of all the conditions, some provision of the regulating statute would otherwise be disregarded. The Commission further declared that where a regulation pertaining to transportation has been in force a long time business interests become so adjusted thereto that any abrupt and material change is almost certain to produce undue and therefore unlawful discrimination.

#### Reparation for Increase in Grain Rates.

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For several years defendants maintained uniform rates on shipments of grain and kindred products to Atlanta, Ga., and points beyond, from a group of towns on their lines beginning on the north with Henderson and Uniontown, Ky., and including Morganfield, Henshaw, Corydon, Grove Center, and other nearby points; but on December 15, 1904, defendants increased the rates to said destination points by adding 4 cents per 100 lbs. on all shipments originating at any point in the group described except Henderson and Uniontown. This gave to Henderson and Uniontown lower rates than those applicable from the intermediate points. On April 5, 1905, defendants canceled the increased rates from the intermediate points, restoring the former rates, and thus again putting all points in this group upon an equal rate basis. Complainants filed petitions to obtain reparation on their shipments of hay and grain made from said points under the increased rates. Defendants stipulated that they would submit to a reparation order on the basis of 3 cents per 100 lbs. on all shipments made during the period of the effectiveness of the higher rates. Upon that basis final adjustment of the controversy was agreed to, and reparation orders aggregating \$1,333 were entered.

#### MANUFACTURING AND BUSINESS.

Edward G. Buchanan has been elected Vice-President of the Carbon Steel Company, New York, with headquarters, as heretofore, in New York.

It is said that land has been bought at New Chatham, N. S., for a new car building plant. The name of the new company has not been announced.

The Dominion Car & Foundry Co., Montreal, Que., has begun a 500 ft. long extension of its car shops. It is also building a forge shop and a power plant.

The Raymond Concrete Pile Co., Chicago, has been awarded the contract for the foundations of the power house of the Home Electric Light & Power Co., at Tyrone, Pa.

E. A. Pittis, southern representative of The Midvale Steel Company, Philadelphia, Pa., who has been on leave of absence for a year, has fully recovered his health, and will resume his duties on November 1.

The A. B. C. Bearing Corporation of Virginia, has acquired from the Atlantic Brass Company, of New York, all the patent rights and licenses of the A. B. C. journal bearing and wedge. The offices of the new company are in the American National Bank building, Richmond, Va.

Beyer, Peacock & Co., Manchester, Eng., are believed to have bought land near Lachine, Que., for a large locomotive building plant. It is said that the Grand Trunk has guaranteed orders for 60 locomotives a year from the new plant for five years, and the Canadian Pacific, 40 locomotives a year.

The Pressed Steel Car Co., New York, and the Western Steel Car & Foundry Co., New York, have established a branch office in St. Louis, Mo., to take care of business in what is to be known as the Southwestern district. W. P. Coleman is Manager of Sales and C. D. Terrell, Assistant Manager of Sales. The office is in the Bank of Commerce building.

Julian L. Yale & Co., Chicago, have been awarded a contract by the Canadian Northern for the complete Miller system of heat distribution for the shops at Winnipeg. This firm has also received an order for the Miller system from the Dominion Car & Foundry Co. for its Montreal shops. In all, 12 contracts for equipping Canadian Northern shops at different points have been awarded to the firm.

The Railway Equipment Co., Portland, Ore., has bought six acres of ground on the Willamette river about 3 miles from Portland, and will build shops for repairing locomotives and rebuilding cars. Machinery for making frogs, switches, and general track work will also be installed. The tract has both water and rail facilities. The company would like to receive catalogues from manufacturers of railroad shop tools.

The Natural Carbon Paint Co., Freeport, Ill., had a group picture made of delegates and guests at the Milwaukee convention of the Association of Railway Superintendents of Bridges and Buildings. Each member of the association is to be presented with a copy bearing the name of the company on the back. It will form an acceptable souvenir of the convention. The idea was that of A. M. McFarland, Eastern Sales Manager, who had charge of the exhibit at Milwaukee.

Receivers were appointed on October 22 for the Westinghouse Electric & Manufacturing Company, the Westinghouse Machine Company and the Security Investment Company. It was expected that receivers would be appointed the next day for the Nernst Lamp Company. All the companies are solvent, but their capital is tied up in plant and material. The tight money market made it so difficult to get working capital to meet obligations that it was decided that all interests would be best served by receiverships. The Westinghouse Air Brake Company and the Union Switch & Signal Company are not affected. The receivers are as follows: For the W. E. & M. Co., T. Hart Given, President of the Farmers Deposit National Bank; H. S. A. Stewart, real estate dealer, and E. M. Herr, Vice-President of the W. E. & M. Co.; for the W. M. Co., William McConway, President of the McConway & Torley Co., Pittsburgh; W. H. Donner, President of the Union Improvement Company, and E. E. Keller, Vice-President of the W. M. Co.; for the S. I. Co., the Fidelity Trust Company, of Pittsburgh.

David B. Carse, M. Am. Soc. M. E., has resigned from the chairmanship of the Advisory Committee of the U. S. Steel Corporation. Mr. Carse and his brother, John B. Carse, have composed this committee since its formation five years ago, the duties of the committee being to keep track of all expenditures of the company under the appropriations by the Finance Committee. John B. Carse will take care of the future work of the committee. David B. Carse, before going to the U. S. Steel Corporation, was president of Carse Brothers Company, Chicago, and, before that, General Manager of Greenlee Bros. & Co., Chicago. He was the resident engineer in charge of the construction of the Hegewisch Works, now known as the Burnham Works of the Pressed Steel Car Co., New York. Mr. Carse is now taking up again the business of Carse Bros. Co., dealing in machinery and supplies for railroad work. It has been reorganized and its headquarters removed from Chicago to New York, with offices at 12 Broadway. A department of electrical specialties has been added.

#### Iron and Steel.

The Baltimore & Ohio has ordered 300 tons of steel for bridges.

The Erie is said to be in the market for steel for four or five small bridges.

The Pennsylvania has ordered 300 tons of bridge steel from the American Bridge Company.

The Pittsburgh & Lake Erie has ordered 500 tons of bridge steel from the American Bridge Company.

The Southwestern Railroad of Texas has ordered 2,000 tons of rails from the Carnegie Steel Company for delivery this year.

#### ELECTIONS AND APPOINTMENTS.

##### Executive, Financial and Legal Officers.

*Chicago & North-Western.*—E. E. Osborn, Vice President and Secretary, has been elected also a Director, succeeding Albert Keep, deceased. See Chicago, St. Paul, Minneapolis & Omaha.

*Chicago, St. Paul, Minneapolis & Omaha.*—Marvin Hughitt, President, has been elected Chairman of the Executive Committee. W. A. Gardner, Vice-President of the Chicago & North-Western, succeeds Mr. Hughitt, and has also been elected a Director, succeeding Albert Keep, deceased. T. A. Polleys, Tax Commissioner, has been elected Secretary, succeeding E. E. Woodman, who resigned on account of ill-health, but who remains Right of Way Commissioner.

*Lehigh & New England.*—R. H. Wilbur has been elected Vice-President and General Manager. See Lehigh Coal & Navigation.

*Lehigh Coal & Navigation.*—R. H. Wilbur, formerly General Manager of the Lehigh Valley, has been elected Vice-President of the Lehigh Coal & Navigation Co. George B. Harris, Vice-President, has been elected Second Vice-President.



**New York Public Service Commission.**—Archibald Buchanan, Jr., Superintendent of Motive Power of the Central Vermont, has been appointed Chief of the Bureau of Inspection of the Public Service Commission, Second district, with office at Albany, N. Y., effective November 1.

**Pennsylvania.**—Percival Roberts, Jr., M. Am. Soc. C. E., etc., a Director of the Philadelphia National Bank, has been elected a Director of the Pennsylvania, succeeding A. M. Fox, deceased.

#### Operating Officers.

**Atchison, Topeka & Santa Fe.**—F. A. Lehman has been appointed Superintendent of Transportation, succeeding C. W. Kouns, promoted.

**Canadian Northern.**—W. A. Brown has been appointed Superintendent of the Fourth district, with office at Edmonton, Alb., succeeding C. Carey, resigned.

**Chicago & Alton.**—See Toledo, St. Louis & Western.

**Chicago, Burlington & Quincy.**—Frank E. Ward, General Manager of the Great Northern, has been appointed General Manager of the Burlington Lines East of the Missouri River, with office at Chicago, succeeding J. M. Gruber, resigned.

James Russell, Superintendent at Beardstown, Ill., has been appointed Superintendent at Brookfield, Mo., succeeding J. E. Votaw, resigned. P. H. Hough, Trainmaster at La Crosse, Wis., succeeds Mr. Russell. F. C. Beisel succeeds Mr. Hough.

**Chicago, Rock Island & Pacific.**—A. B. Copley, Superintendent of Terminals at Kansas City, Mo., has been appointed Superintendent of the Indian Territory division, with office at Haileyville, Ind. T., succeeding W. Rudd, resigned. M. J. Kennelly has been appointed Superintendent of the Louisiana division, with office at Eldorado, Ark., succeeding J. C. Nolan, resigned.

**El Paso & Southwestern.**—The office of F. B. King, Superintendent of the Western division, has been moved from El Paso, Tex., to Douglas, Ariz.

**Erie.**—T. O'Neill, Trainmaster at Galion, Ohio, has been appointed Assistant Superintendent at Kent, Ohio, succeeding E. C. Allen, promoted. C. G. Smith succeeds Mr. O'Neill. F. M. Hawley, Trainmaster at Salamanca, N. Y., has been appointed Trainmaster at Susquehanna, Pa., succeeding C. A. Ford, resigned to go to the Pennsylvania Steel Co. W. H. Daley, chief dispatcher at Salamanca, succeeds Mr. Hawley.

**Great Northern.**—See Chicago, Burlington & Quincy; also Northern Pacific.

**Kansas City Southern.**—F. B. De Garmo, Trainmaster at Pittsburg, Kan., has been appointed Superintendent at that place, succeeding H. E. Whittenberger, who is now Superintendent of the Eastern division of the Grand Trunk. J. E. Murphy succeeds Mr. De Garmo.

**Missouri, Kansas & Texas of Texas.**—R. J. Sullivan, Superintendent of the Shreveport and Mineola divisions and the McKinney branch, has returned from leave of absence. George Stoner, who has been acting in his place, has resumed his office as Trainmaster of the Dallas and Denton divisions and the Bonham branch.

**Mt. Jewett, Kinzua & Riterville.**—George W. Johnson has been appointed Superintendent, succeeding D. W. Boh, resigned.

**New York Central & Hudson River.**—F. N. Mellus, Jr., has been appointed Assistant Trainmaster, with office at Poughkeepsie, N. Y.

H. Scott, Assistant Trainmaster at Clearfield, Pa., has been appointed Trainmaster of the Beech Creek district of the Pennsylvania division, with office at Jersey Shore Junction, Pa. W. A. Hammer, chief dispatcher at Jersey Shore Junction, succeeds Mr. Scott.

**Northern Pacific.**—George T. Slade, formerly General Superintendent of the Great Northern, has been appointed General Manager of the Northern Pacific Lines East of Trout Creek, succeeding Henry J. Horn, resigned.

**Portland & Seattle.**—Mott Sawyer has been appointed Trainmaster, with office at Vancouver, Wash.

**Toledo, St. Louis & Western.**—The authority of W. A. Freese, Superintendent of Telegraph of the Chicago & Alton, has been extended over the Toledo, St. Louis & Western.

**Vera Cruz & Pacific.**—T. J. McCune, Superintendent of Transportation, has been appointed Superintendent, with office at Tierra Blanca, Vera Cruz.

#### Traffic Officers.

**Louisville & Nashville.**—L. R. Wasson, General Agent at Detroit, Mich., has resigned to go into other business.

**Southern Indiana.**—J. T. Averitt has been appointed Assistant General Freight Agent, with office at Chicago.

#### Engineering and Rolling Stock Officers.

**Atchison, Topeka & Santa Fe.**—Alfred Lovell, Superintendent of Motive Power, has resigned.

**Boston & Albany.**—A. J. Fries, Master Mechanic of the Boston division, has been appointed Master Mechanic of the Albany division, with office at Springfield, Mass., succeeding P. T. Loneragan, resigned. E. H. Smith succeeds Mr. Fries, with office at Allston, Mass.

**Central Vermont.**—See New York Public Service Commission.

**Chicago & Alton.**—See Toledo, St. Louis & Western.

**Hocking Valley.**—Winford L. Mattoon, who was recently appointed Principal Assistant Engineer of the Hocking Valley and the Zanesville & Western, was born in 1881 at Plain City, Ohio. He took a classical course at Denison University, Granville, Ohio, and then went to the Ohio State University for three years. In 1903 he went to the Pennsylvania Lines West, where he had already worked for one summer during his college course. After a few months he went into an engineering corps on the Hocking Valley, and the next year was appointed Assistant Engineer of the Chicago, Rock Island & Pacific at Trenton, Mo. After serving as Assistant Roadmaster and again as Assistant Engineer on different divisions of this road, he was last winter appointed Engineer of Maintenance of Way of the Corning division of the Toledo & Ohio Central and the Zanesville & Western, where he remained until his recent promotion.

**Illinois Central.**—J. H. Nash, Master Mechanic at East St. Louis, Ill., has been appointed Master Mechanic at Paducah, Ky., succeeding R. E. Fulmer, resigned to go to another road.

**Lehigh & New England.**—R. G. Kenly, General Superintendent, has been appointed also Acting Chief Engineer, with office at Bethlehem, Pa., succeeding W. J. Young, resigned.

**New York Central Lines.**—R. D. Smith, who was recently appointed Assistant Superintendent of Motive Power, in charge of all matters pertaining to the Boston & Albany, was born in New York and educated at Albany, N. Y. He worked as a machinist in the Delaware & Hudson shops, and then went to the Kansas City, St. Joseph & Council Bluffs as a gang foreman. He worked as fireman and then engineman, and, after the road was absorbed by the Chicago, Burlington & Quincy, was made assistant foreman of the machine shops at Aurora, Ill. He was later made foreman at that place and then general foreman of the locomotive and car departments. In 1888 he was appointed Master Mechanic at Chicago, where he remained until 1902, when he was made Superintendent of Motive Power of the Lines West of the Missouri River. In 1906 he was appointed Mechanical Expert for the Lake Shore & Michigan Southern, where he remained until his recent transfer.

**Seaboard Air Line.**—A. J. Poole, who was recently appointed General Master Mechanic, was born in 1869 in Sumter County, Ga. After a common school education, he began railroad work in 1886 as an apprentice on the Central of Georgia. After working in several railroad shops in the South, he went to the Seaboard Air Line, in 1894, as a machinist. After two years he was made roundhouse foreman at Americus, Ga., and in 1900 was appointed general foreman of shops. Three years later he was made Master Mechanic of the Fourth and Fifth divisions, and was later transferred to the Third and the Atlantic & Birmingham divisions, where he remained until his recent promotion.

**Toledo, St. Louis & Western.**—The authority of W. D. Taylor, Chief Engineer of the Chicago & Alton, has been extended over the Toledo, St. Louis & Western.

**Western Maryland.**—R. C. Evans, Master Mechanic at Elkins, W. Va., has been appointed Superintendent of Motive Power, with office at Union Bridge, Md., succeeding W. Miller, resigned.

#### Special Officers.

**Atchison, Topeka & Santa Fe.**—C. F. Ludington has been appointed Chief Fuel Supervisor, with headquarters at Topeka, Kan., and H. E. Westcott, Fuel Supervisor of the Coast Lines, with headquarters at San Bernardino, Cal.

#### LOCOMOTIVE BUILDING.

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#### MANUFACTURING AND BUSINESS.

Edward G. Buchanan has been elected Vice-President of the Carbon Steel Company, New York, with headquarters, as heretofore, in New York.

It is said that land has been bought at New Chatham, N. S., for a new car building plant. The name of the new company has not been announced.

The Dominion Car & Foundry Co., Montreal, Que., has begun a 500 ft. long extension of its car shops. It is also building a forge shop and a power plant.

The Raymond Concrete Pile Co., Chicago, has been awarded the contract for the foundations of the power house of the Home Electric Light & Power Co., at Tyrone, Pa.

E. A. Pittis, southern representative of The Midvale Steel Company, Philadelphia, Pa., who has been on leave of absence for a year, has fully recovered his health, and will resume his duties on November 1.

The A. B. C. Bearing Corporation of Virginia, has acquired from the Atlantic Brass Company, of New York, all the patent rights and licenses of the A. B. C. journal bearing and wedge. The offices of the new company are in the American National Bank building, Richmond, Va.

Beyer, Peacock & Co., Manchester, Eng., are believed to have bought land near Lachine, Que., for a large locomotive building plant. It is said that the Grand Trunk has guaranteed orders for 60 locomotives a year from the new plant for five years, and the Canadian Pacific, 40 locomotives a year.

The Pressed Steel Car Co., New York, and the Western Steel Car & Foundry Co., New York, have established a branch office in St. Louis, Mo., to take care of business in what is to be known as the Southwestern district. W. P. Coleman is Manager of Sales and C. D. Terrell, Assistant Manager of Sales. The office is in the Bank of Commerce building.

Julian L. Yale & Co., Chicago, have been awarded a contract by the Canadian Northern for the complete Miller system of heat distribution for the shops at Winnipeg. This firm has also received an order for the Miller system from the Dominion Car & Foundry Co. for its Montreal shops. In all, 12 contracts for equipping Canadian Northern shops at different points have been awarded to the firm.

The Railway Equipment Co., Portland, Ore., has bought six acres of ground on the Willamette river about 3 miles from Portland, and will build shops for repairing locomotives and rebuilding cars. Machinery for making frogs, switches, and general track work will also be installed. The tract has both water and rail facilities. The company would like to receive catalogues from manufacturers of railroad shop tools.

The Natural Carbon Paint Co., Freeport, Ill., had a group picture made of delegates and guests at the Milwaukee convention of the Association of Railway Superintendents of Bridges and Buildings. Each member of the association is to be presented with a copy bearing the name of the company on the back. It will form an acceptable souvenir of the convention. The idea was that of A. M. McFarland, Eastern Sales Manager, who had charge of the exhibit at Milwaukee.

Receivers were appointed on October 22 for the Westinghouse Electric & Manufacturing Company, the Westinghouse Machine Company and the Security Investment Company. It was expected that receivers would be appointed the next day for the Nernst Lamp Company. All the companies are solvent, but their capital is tied up in plant and material. The tight money market made it so difficult to get working capital to meet obligations that it was decided that all interests would be best served by receiverships. The Westinghouse Air Brake Company and the Union Switch & Signal Company are not affected. The receivers are as follows: For the W. E. & M. Co., T. Hart Given, President of the Farmers Deposit National Bank; H. S. A. Stewart, real estate dealer, and E. M. Herr, Vice-President of the W. E. & M. Co.; for the W. M. Co., William McConway, President of the McConway & Torley Co., Pittsburgh; W. H. Donner, President of the Union Improvement Company, and E. E. Keller, Vice-President of the W. M. Co.; for the S. I. Co., the Fidelity Trust Company, of Pittsburgh.

David B. Carse, M. Am. Soc. M. E., has resigned from the chairmanship of the Advisory Committee of the U. S. Steel Corporation. Mr. Carse and his brother, John B. Carse, have composed this committee since its formation five years ago, the duties of the committee being to keep track of all expenditures of the company under the appropriations by the Finance Committee. John B. Carse will take care of the future work of the committee. David B. Carse, before going to the U. S. Steel Corporation, was president of Carse Brothers Company, Chicago, and, before that, General Manager of Greenlee Bros. & Co., Chicago. He was the resident engineer in charge of the construction of the Hegewisch Works, now known as the Burnham Works of the Pressed Steel Car Co., New York. Mr. Carse is now taking up again the business of Carse Bros. Co., dealing in machinery and supplies for railroad work. It has been reorganized and its headquarters removed from Chicago to New York, with offices at 12 Broadway. A department of electrical specialties has been added.

#### Iron and Steel.

The Baltimore & Ohio has ordered 300 tons of steel for bridges.

The Erie is said to be in the market for steel for four or five small bridges.

The Pennsylvania has ordered 300 tons of bridge steel from the American Bridge Company.

The Pittsburgh & Lake Erie has ordered 500 tons of bridge steel from the American Bridge Company.

The Southwestern Railroad of Texas has ordered 2,000 tons of rails from the Carnegie Steel Company for delivery this year.

#### ELECTIONS AND APPOINTMENTS.

##### Executive, Financial and Legal Officers.

*Chicago & North-Western.*—E. E. Osborn, Vice President and Secretary, has been elected also a Director, succeeding Albert Keep, deceased. See Chicago, St. Paul, Minneapolis & Omaha.

*Chicago, St. Paul, Minneapolis & Omaha.*—Marvin Hughitt, President, has been elected Chairman of the Executive Committee. W. A. Gardner, Vice-President of the Chicago & North-Western, succeeds Mr. Hughitt, and has also been elected a Director, succeeding Albert Keep, deceased. T. A. Polleys, Tax Commissioner, has been elected Secretary, succeeding E. E. Woodman, who resigned on account of ill-health, but who remains Right of Way Commissioner.

*Lehigh & New England.*—R. H. Wilbur has been elected Vice-President and General Manager. See Lehigh Coal & Navigation.

*Lehigh Coal & Navigation.*—R. H. Wilbur, formerly General Manager of the Lehigh Valley, has been elected Vice-President of the Lehigh Coal & Navigation Co. George B. Harris, Vice-President, has been elected Second Vice-President.



*New York Public Service Commission.*—Archibald Buchanan, Jr., Superintendent of Motive Power of the Central Vermont, has been appointed Chief of the Bureau of Inspection of the Public Service Commission, Second district, with office at Albany, N. Y., effective November 1.

*Pennsylvania.*—Percival Roberts, Jr., M. Am. Soc. C. E., etc., a Director of the Philadelphia National Bank, has been elected a Director of the Pennsylvania, succeeding A. M. Fox, deceased.

#### Operating Officers.

*Atchison, Topeka & Santa Fe.*—F. A. Lehman has been appointed Superintendent of Transportation, succeeding C. W. Kouns, promoted.

*Canadian Northern.*—W. A. Brown has been appointed Superintendent of the Fourth district, with office at Edmonton, Alb., succeeding C. Carey, resigned.

*Chicago & Alton.*—See Toledo, St. Louis & Western.

*Chicago, Burlington & Quincy.*—Frank E. Ward, General Manager of the Great Northern, has been appointed General Manager of the Burlington Lines East of the Missouri River, with office at Chicago, succeeding J. M. Gruber, resigned.

James Russell, Superintendent at Beardstown, Ill., has been appointed Superintendent at Brookfield, Mo., succeeding J. E. Votaw, resigned. P. H. Hough, Trainmaster at La Crosse, Wis., succeeds Mr. Russell. F. C. Beisel succeeds Mr. Hough.

*Chicago, Rock Island & Pacific.*—A. B. Copley, Superintendent of Terminals at Kansas City, Mo., has been appointed Superintendent of the Indian Territory division, with office at Haileyville, Ind. T., succeeding W. Rudd, resigned. M. J. Kennelly has been appointed Superintendent of the Louisiana division, with office at Eldorado, Ark., succeeding J. C. Nolan, resigned.

*El Paso & Southwestern.*—The office of F. B. King, Superintendent of the Western division, has been moved from El Paso, Tex., to Douglas, Ariz.

*Erie.*—T. O'Neill, Trainmaster at Galion, Ohio, has been appointed Assistant Superintendent at Kent, Ohio, succeeding E. C. Allen, promoted. C. G. Smith succeeds Mr. O'Neill. F. M. Hawley, Trainmaster at Salamanca, N. Y., has been appointed Trainmaster at Susquehanna, Pa., succeeding C. A. Ford, resigned to go to the Pennsylvania Steel Co. W. H. Daley, chief dispatcher at Salamanca, succeeds Mr. Hawley.

*Great Northern.*—See Chicago, Burlington & Quincy; also Northern Pacific.

*Kansas City Southern.*—F. B. De Garmo, Trainmaster at Pittsburg, Kan., has been appointed Superintendent at that place, succeeding H. E. Whittenberger, who is now Superintendent of the Eastern division of the Grand Trunk. J. E. Murphy succeeds Mr. De Garmo.

*Missouri, Kansas & Texas of Texas.*—R. J. Sullivan, Superintendent of the Shreveport and Mineola divisions and the McKinney branch, has returned from leave of absence. George Stoner, who has been acting in his place, has resumed his office as Trainmaster of the Dallas and Denton divisions and the Bonham branch.

*Mt. Jewett, Kinzua & Riterville.*—George W. Johnson has been appointed Superintendent, succeeding D. W. Boh, resigned.

*New York Central & Hudson River.*—F. N. Melius, Jr., has been appointed Assistant Trainmaster, with office at Poughkeepsie, N. Y.

H. Scott, Assistant Trainmaster at Clearfield, Pa., has been appointed Trainmaster of the Beech Creek district of the Pennsylvania division, with office at Jersey Shore Junction, Pa. W. A. Hammer, chief dispatcher at Jersey Shore Junction, succeeds Mr. Scott.

*Northern Pacific.*—George T. Slade, formerly General Superintendent of the Great Northern, has been appointed General Manager of the Northern Pacific Lines East of Trout Creek, succeeding Henry J. Horn, resigned.

*Portland & Seattle.*—Mott Sawyer has been appointed Trainmaster, with office at Vancouver, Wash.

*Toledo, St. Louis & Western.*—The authority of W. A. Freese, Superintendent of Telegraph of the Chicago & Alton, has been extended over the Toledo, St. Louis & Western.

*Vera Cruz & Pacific.*—T. J. McCune, Superintendent of Transportation, has been appointed Superintendent, with office at Tierra Blanca, Vera Cruz.

#### Traffic Officers.

*Louisville & Nashville.*—L. R. Wasson, General Agent at Detroit, Mich., has resigned to go into other business.

*Southern Indiana.*—J. T. Averitt has been appointed Assistant General Freight Agent, with office at Chicago.

#### Engineering and Rolling Stock Officers.

*Atchison, Topeka & Santa Fe.*—Alfred Lovell, Superintendent of Motive Power, has resigned.

*Boston & Albany.*—A. J. Fries, Master Mechanic of the Boston division, has been appointed Master Mechanic of the Albany division, with office at Springfield, Mass., succeeding P. T. Loneragan, resigned. E. H. Smith succeeds Mr. Fries, with office at Allston, Mass.

*Central Vermont.*—See New York Public Service Commission.

*Chicago & Alton.*—See Toledo, St. Louis & Western.

*Hocking Valley.*—Winford L. Mattoon, who was recently appointed Principal Assistant Engineer of the Hocking Valley and the Zanesville & Western, was born in 1881 at Plain City, Ohio. He took a classical course at Denison University, Granville, Ohio, and then went to the Ohio State University for three years. In 1903 he went to the Pennsylvania Lines West, where he had already worked for one summer during his college course. After a few months he went into an engineering corps on the Hocking Valley, and the next year was appointed Assistant Engineer of the Chicago, Rock Island & Pacific at Trenton, Mo. After serving as Assistant Roadmaster and again as Assistant Engineer on different divisions of this road, he was last winter appointed Engineer of Maintenance of Way of the Corning division of the Toledo & Ohio Central and the Zanesville & Western, where he remained until his recent promotion.

*Illinois Central.*—J. H. Nash, Master Mechanic at East St. Louis, Ill., has been appointed Master Mechanic at Paducah, Ky., succeeding R. E. Fulmer, resigned to go to another road.

*Lehigh & New England.*—R. G. Kenly, General Superintendent, has been appointed also Acting Chief Engineer, with office at Bethlehem, Pa., succeeding W. J. Young, resigned.

*New York Central Lines.*—R. D. Smith, who was recently appointed Assistant Superintendent of Motive Power, in charge of all matters pertaining to the Boston & Albany, was born in New York and educated at Albany, N. Y. He worked as a machinist in the Delaware & Hudson shops, and then went to the Kansas City, St. Joseph & Council Bluffs as a gang foreman. He worked as fireman and then engineman, and, after the road was absorbed by the Chicago, Burlington & Quincy, was made assistant foreman of the machine shops at Aurora, Ill. He was later made foreman at that place and then general foreman of the locomotive and car departments. In 1888 he was appointed Master Mechanic at Chicago, where he remained until 1902, when he was made Superintendent of Motive Power of the Lines West of the Missouri River. In 1906 he was appointed Mechanical Expert for the Lake Shore & Michigan Southern, where he remained until his recent transfer.

*Seaboard Air Line.*—A. J. Poole, who was recently appointed General Master Mechanic, was born in 1869 in Sumter County, Ga. After a common school education, he began railroad work in 1886 as an apprentice on the Central of Georgia. After working in several railroad shops in the South, he went to the Seaboard Air Line, in 1894, as a machinist. After two years he was made roundhouse foreman at Americus, Ga., and in 1900 was appointed general foreman of shops. Three years later he was made Master Mechanic of the Fourth and Fifth divisions, and was later transferred to the Third and the Atlantic & Birmingham divisions, where he remained until his recent promotion.

*Toledo, St. Louis & Western.*—The authority of W. D. Taylor, Chief Engineer of the Chicago & Alton, has been extended over the Toledo, St. Louis & Western.

*Western Maryland.*—R. C. Evans, Master Mechanic at Elkins, W. Va., has been appointed Superintendent of Motive Power, with office at Union Bridge, Md., succeeding W. Miller, resigned.

#### Special Officers.

*Atchison, Topeka & Santa Fe.*—C. F. Ludington has been appointed Chief Fuel Supervisor, with headquarters at Topeka, Kan., and H. E. Westcott, Fuel Supervisor of the Coast Lines, with headquarters at San Bernardino, Cal.

#### LOCOMOTIVE BUILDING.

*The Baltimore & Ohio,* it is said, will soon be in the market for 50 locomotives.

*The Quebec & Lake St. John* is said to have ordered 150 box cars from Rhodes, Curry & Co.

The Southern has ordered one Shay locomotive from the Lima Locomotive & Machine Company.

The Carolina & North-Western has ordered one Shay locomotive from the Lima Locomotive & Machine Company.

The Manufacturers' Railway, St. Louis, has ordered one Shay locomotive from the Lima Locomotive & Machine Company.

Vickers Sons & Maxim, London, Eng., have ordered one four-wheel saddle tank switching locomotive from the Davenport Locomotive Works.

The Boston & Maine has ordered 15 six-wheel switching locomotives from the American Locomotive Company for January, February and June, 1908, delivery.

The Canadian Northern has ordered 500 thirty-ton box cars from Rhodes, Curry & Co., and is said to have ordered 300 Hart convertible ballast cars from the Canada Car Co.

The Kansas City Southern has ordered 21 consolidation locomotives and nine switch engines from the Baldwin Locomotive Works. All these engines are to be delivered during December, 1907.

The Wisconsin Central, as reported in the Railroad Gazette of October 11, has ordered eight simple consolidation (2-8-0) locomotives and two switching locomotives from the American Locomotive Co. The consolidation locomotives are for January, 1908, delivery, and the special equipment for them is as follows:

General Dimensions.	
Type of locomotive	Consolidation
Weight, total	163,400 lbs.
Weight on drivers	142,000 "
Diameter of drivers	63 in.
Cylinders	21 in. x 26 "
Boiler, working steam pressure	200 lbs.
" number of tubes	306
Firebox, length	108 in.
" width	63 "
Tank capacity	6,000 gals.
Coal capacity	12 tons

Special Equipment.	
Air brakes	Westinghouse
Bell ringer	Gallmar
Piston rod packings	Jerome
Steam heat equipment	Wisconsin Central

The switching locomotives are exact duplicates of the last locomotives ordered from the American Locomotive Co.

The Eagle Lumber Company, Eagle Mills, La., has ordered one consolidation (2-8-0) locomotive from the Davenport Locomotive Works.

General Dimensions.	
Type of locomotive	Consolidation
Weight, total	90,000 lbs.
Weight, on drivers	80,000 "
Diameter of drivers	48 in.
Cylinders	16 in. x 24 in.
Boiler, diameter	50 "
" working steam pressure	160 lbs.
" material	Worth steel
" number of tubes	160
" diameter of tubes	2 in.
" length of tubes	13 ft. 8 "
Firebox, length	72 "
" width	42 "
" material	Worth steel.
Tender	U-tank
Tank capacity	2,700 gals.
Coal capacity	3½ tons.

Special Equipment.	
Air-brakes	Westinghouse automatic
Injectors	Monitor
Lubricator	Detroit Bull's-eye
Sanding devices	Leach
Packing	Jerome metallic
Tires	Midvale

#### CAR BUILDING.

The Chicago & North-Western has ordered 25 passenger coaches from the Pullman Co.

The Wabash, Chester & Western has ordered 25 cars from the American Car & Equipment Co.

The Buffalo, Rochester & Pittsburgh is said to be in the market for 750 gondola cars of 100,000 lbs. capacity.

The Missouri River & North-Western has ordered 15 gondola cars from the American Car & Equipment Co.

The Arkansas, Louisiana & Gulf has ordered 25 cars from the American Car & Equipment Co. J. M. Parker, Monroe, La., is General Manager.

The Harriman Lines, as reported in the Railroad Gazette of October 18, have ordered 16 passenger cars from the American Car & Foundry Co. and 10 from the Pullman Co.

The Idaho & Washington Northern, as reported in the Railroad Gazette of October 18, has ordered four cabooses from the Pullman Company, for November delivery. These cabooses will be 34 ft. 9½ in. long, 9 ft. 10¼ in. wide, over all, and 14 ft. 4¼ in. high, over cupola. The special equipment includes:

Brakes	Westinghouse
Couplers	Tower
Draft rigging	Westinghouse friction

The San Antonio & Aransas Pass, as reported in the Railroad Gazette of August 9, is asking prices on 200 ventilated box cars and 275 plain box cars for December, 1907, delivery.

The Atchison, Topeka & Santa Fe, as reported in the Railroad Gazette of October 18, has ordered 100 refrigerator cars of 60,000 lbs. capacity from the American Car & Foundry Company. These cars will measure 32 ft. 6 in. long, 8 ft. 2¾ in. wide and 7 ft. 3 in. high, inside measurements. The special equipment includes:

Bolsters	Atchison, Topeka & Santa Fe standard
Brake-beams	Creco
Brakes	Westinghouse
Draft rigging	Miner
Trucks	Atchison, Topeka & Santa Fe standard.
Wheels	American Car & Foundry Co.

The Long Island, as reported in the Railroad Gazette of October 18, has ordered 50 all-steel vestibuled passenger coaches, of which 30 will be without saloon and will seat 72 persons, and 20 will have saloon and will seat 69 persons. Delivery is to be made February 15, 1908. The cars will measure 53 ft. 8¼ in. long, 8 ft. 11¾ in. wide and 8 ft. 4¾ in. high, inside measurements, and 64 ft. 5¾ in. long, 9 ft. 11½ in. wide and 13 ft. 8 in. high, over all. The special equipment includes:

Bolsters, truck	Pennsylvania R. R. standard, built-up type
Brake-shoes	Christie
Brakes	Westinghouse
Brasses	Ajax Elastic Bronze
Couplers	Janney, three-stem
Curtain fixtures	National Lock Washer Co.
Curtain material	Pantasote
Door fastenings	J. L. Howard & Co.
Draft rigging	Westinghouse friction
Heating system	Long Island R. R. straight steam
Light	Pintch spg. mantle lamps
Springs	Union Spring & Mfg. Co.
Trucks	Pennsylvania R.R. special steel, 4-wheel
Wheels	Schoen rolled steel

#### RAILROAD STRUCTURES.

ALIQUIPPA, PA.—The Pittsburgh & Lake Erie has decided to make additions to its yards. All the land necessary for the improvements has been bought. The yards will be more than a mile long.

ALTOONA, PA.—It is said that the Pennsylvania is negotiating with the city officials to abolish grade crossings at 37th, 33d and 29th streets, by building overhead bridges.

ASTORIA, ORE.—The Harriman interests, it is said, have bought 4,000 ft. of water frontage on the west side of Young's bay as a site for future terminals.

BEAVER, PA.—The Pittsburgh & Lake Erie is planning to build a bridge over the Ohio river at the mouth of Beaver river to cost about \$350,000. The company has bought a large amount of land for approaches and as a site on which to relocate its tracks. A new passenger station is also to be built and other improvements made at a total cost of about \$2,000,000.

CAMPBELLTON, N. B.—It is said that the proposed bridge over the Restigouche river here, which is to be 3,330 ft. long, is assured. The structure will cost about \$600,000. T. Malcolm can give information.

COATESVILLE, PA.—Contracts are reported let by the Philadelphia & Reading for building a four-span steel girder bridge 250 ft. long over the west branch of Brandywine creek.

EVANSVILLE, IND.—The Evansville & Terre Haute is putting up a new passenger station here, to cost about \$125,000.

GOMEZ PALACIO, MEX.—The Mexican Central, it is said, is planning to put up large shops and terminals here.

HARRISBURG, PA.—An ordinance is before the City Council for building a bridge by the Philadelphia & Reading over its tracks at Thirteenth street.

HOUSTON, TEX.—The International & Great Northern has finished its docks on the Houston ship canal just below Houston. The company owns a frontage of several miles on the canal, and will construct extensive terminal facilities on this property.

JERSEY SHORE, PA.—A contract has been given to the York Bridge Company at \$54,945 for the new bridge over the Susquehanna river here.

LANCASTER, PA.—The Board of Trade is trying to secure the building of bridges over the Pennsylvania and the Philadelphia & Reading tracks here. The question is now being considered by a special committee.

MILWAUKEE, WIS.—The planing mill of the Chicago, Milwaukee & St. Paul shops was this week destroyed by fire; loss \$100,000.

MONTREAL, QUE.—The Montreal City Council has appointed a committee to consider a proposition to depress the tracks of the Grand Trunk in this city 15 ft. The plans call for the construction of overhead bridges at street crossings.

NEW YORK, N. Y.—The city has bought additional land for the



new Brooklyn bridge terminal in the Borough of Manhattan and for the subway loop connecting the Brooklyn and Williamsburg bridges.

OTTAWA, ONT.—A number of satisfactory bids were recently received for the foundations for the new Grand Trunk passenger station, baggage annex, train shed and concourse, and also for the hotel and subway connecting same with the station by B. L. Gilbert, of New York, the chief architect of the buildings. The company is ready to begin work on the station to cost \$1,000,000 and on the hotel to cost \$1,500,000, this fall or next summer. The commencement of the work depends on the carrying out of the agreement made by those interested in Ottawa, with the Grand Trunk as to the fixed assessments. (Aug. 22, p. 215.)

ROCKPORT, IND.—Surveys are being made to locate the site for the proposed railroad bridge over the Ohio river, to be built by the Owensboro & Rockport Terminal & Bridge Co. A. S. Kennedy, President, Rockport.

TERRE HAUTE, IND.—The Evansville & Terre Haute will enlarge its freight house here at a cost of about \$16,000.

WAYCROSS, GA.—The new shops for the Atlantic Coast Line under construction for the past year, are about finished, and will soon be put in operation. The cost of the buildings is about \$500,000 and other improvements and machinery bring the total up to about \$2,000,000.

WILLIAMSPORT, MD.—At a recent meeting of the Washington & Potomac Bridge Company, the report of the Engineer was accepted. It has been decided to shortly ask bids for building a concrete bridge about 1,500 ft. long and 30 ft. wide over the Potomac river here. W. D. Byron & Sons are said to be interested.

The Town Council has granted permission to the Washington & Berkeley Bridge Company to enter the town. The company proposes to build a bridge over the Potomac river.

## RAILROAD CONSTRUCTION.

### New Incorporations, Surveys, Etc.

ATCHISON, TOPEKA & SANTA FE.—Local reports say that this company has given contracts for rebuilding its line from Cicero, Kan., to Mayfield, and for enlarging its yards at Wellington.

BALTIMORE & OHIO.—This company, it is said, will build a large freight classification yard at Somerset, Pa.

Work is under way on a five-mile line from Boswell, Pa., to the Somerset Coal Company's works.

BOSTON & EASTERN (ELECTRIC).—Under this name a company will apply to the Massachusetts Legislature for authority to bore a tunnel under the harbor to East Boston. The plans filed by Engineer James Bickford with the State Railroad Commission call for a tunnel over a mile long, to cost, with approaches, about \$11,000,000.

BUTLER & CHICORA (ELECTRIC).—Application has been made by this company for a charter to build an electric line from Brady's Bend, Pa., southwest to Chicora, with a branch south to Kaylor, a total of 15 miles. John Daly, W. G. Stern, W. Criswell and W. J. Burgan, of Pittsburgh, and E. W. Dewey, of the Allegheny River Improvement Association, are interested.

CHICAGO, MILWAUKEE & ST. PAUL.—This company, it is said, has begun operating its Pacific extension from Mobridge, S. Dak., on the Missouri river, west 100 miles, to Lemmon, in Butte county. This, added to 95 miles of completed road in Montana (from Harlowton west to Lombard on the Montana Railroad), which was bought by the company, and 40 miles laid from the end of that section east, makes a total of 235 miles ready for business out of the 731 miles from the Missouri river to Butte. Work is progressing at various points in Washington and Montana.

CHICAGO, ROCK ISLAND & PACIFIC.—Reports from Waurika, Okla., say that this company is carrying out work to cost about \$500,000, improving its yards and adding new stations, switches and terminals.

CLEVELAND, CINCINNATI, CHICAGO & ST. LOUIS.—Announcement is made by this company that it now has in operation 42 miles of double track between Terre Haute, Ind., and Indianapolis. About 32 miles of second track remains to be built.

DALLAS INTERURBAN.—Contracts, it is said, will shortly be let by this company for building an electric line from Dallas, Tex., east via Mesquite and Forney to Terrell, 30 miles. The names of the promoters are not given.

EAST ERIE COMMERCIAL RAILROAD.—A charter has been granted this company, with \$25,000 capital, to build a line 2½ miles long from Erie, Pa., south to a connection with the Lake Shore & Michigan Southern. It is proposed also to connect with other lines in Erie. Directors are: M. E. Griswold, Jr., President; F. C. Pratt and J. C. Sherwin.

EVANSVILLE & TERRE HAUTE.—This company will build an industrial extension 1½ miles long at Vincennes, Ind., to cost about \$21,000.

GALVESTON & HOUSTON (ELECTRIC).—Contract for building this proposed electric line from Houston, Tex., southeast to Galveston, about 51 miles, it is said, will be let as soon as plans for building the causeway are accepted by the railroads interested. The county of Galveston has authorized an issue of bonds to pay for its share of the work on the causeway. Stone & Webster, of Boston, Mass., as interested in the proposed line. (Apr. 26, p. 599.)

INTER-CALIFORNIA.—See Southern Pacific.

KENTUCKY NORTH AND SOUTH.—Surveys are reported made and work soon to be begun, on this proposed line, from Fullerton, Ky., south to Bristol, Tenn., about 200 miles. The work will include a tunnel about half a mile long through Cumberland mountains, at the Kentucky-Virginia line. (July 26, p. 111.)

MEXICAN CENTRAL.—The extension of this road from Marfil north to Guanajuato, five miles, it is said, will soon be finished.

MEXICAN ROADS.—It is said that the Mexican Government will grant a liberal subsidy to the company which is to build a line from Balsas, on the Mexican Central, west to the Port of Zihuatanejo, on the Pacific Coast, about 125 miles. Preliminary surveys are now being made by Gen. Henry Ide Willey, of Mexico City, who represents a syndicate, having funds to carry out the project. At the Port of Zihuatanejo, the Government proposes to make extensive harbor improvements. (Oct. 4, p. 403.)

Surveys, it is said, have been made for a proposed line from Salvatierra, Guanajuato, on the National of Mexico, west to Puruanadio, Michoacan, 50 miles. Andres Bermejillo, of Mexico City, is the principal promoter. C. A. Malau, of Guadalajara, is Chief Engineer.

MINNEAPOLIS, ST. PAUL & SAULT STE. MARIE.—This company, it is said, will build a railroad from Garden, Mich., north to its main line at Cook's Mills, ten miles. The Vans Harbor Land & Lumber Company will provide the right of way and the railroad company is to furnish the rails and other equipment.

MISSOURI ROADS (ELECTRIC).—Plans are being made by a company to build an electric line from Mexico, Mo., north to Memphis, 90 miles. A. W. Carpenter, of Memphis, and D. Fitzgerald, 80 Wall street, New York, are said to be interested.

NEVADA ROADS.—Plans are being made by a company to build a line from Ely, Nev., southwest to Goldfield, 180 miles. The estimated cost of building the line will be \$1,800,000. It is said that the Guggenheimer interests, associated with Tex Rickard, of Salt Lake City, are back of the project.

NEW YORK SUBWAYS.—The Public Service Commission of the First district, it is said, will report favorably on the proposition to build a subway on the East Side of the Borough of Manhattan. The proposed route, as laid out by the old Rapid Transit Commission, is from a point in the Bronx through Third avenue, across Manhattan bridge to Brooklyn, and thence under Flatbush and Fourth avenues to Coney Island. The cost of the section on the Manhattan side of the East river will be between \$35,000,000 and \$40,000,000, and if contractors fail to bid on the work, the Commission will recommend that the subway be built by the city. The Commission has already authorized the Brooklyn part of the line.

PARRAL & DURANGO.—This company has under consideration the question of building an extension of its road from its present southern terminus, at Mesa de Sandia, Durango, southeast to Tepehuanes, 80 miles, where connection is to be made with the Mexican International. This would furnish a new and shorter line between Parral and Durango.

PENNSYLVANIA ROADS.—Announcement is made that surveys have been made for a line from Uniontown, Pa., west to Wheeling, W. Va. J. V. Thompson, and associates, of Uniontown, who were interested in the Uniontown & Wheeling Short Line, which has been taken over by the Wabash, are interested in the project.

PENNSYLVANIA ROADS (ELECTRIC).—A proposition is under consideration to build an electric line from New Castle, Pa., northeast via Harlansburg, Slippery Rock, Grove City, Raymilton and Polk to Franklin, 51 miles. B. E. Cutler, of Grove City, is the chief promoter.

PHILADELPHIA & READING.—Contracts are reported let by this company for a change in alignment on about half a mile of road at Coatesville, Pa., and for a steel bridge over Brandywine creek.

PITTSBURGH & LAKE ERIE.—J. M. Schoonmaker, Vice-President of this company, denies that the traffic arrangement recently effected with the Coal & Coke and Morgantown & Kingwood, owned by the Davis-Elkins interests in West Virginia, means running over the latter road in the route to Bellington, instead of building a new

line. The original plan to build along the Monongahela river through Morgantown to Fairmont, thence up the Tygart Valley through Grafton to Bellington, is to be carried out. This will give connection with both of the Davis-Elkins roads. (Apr. 5, p. 499.)

**SAN ANTONIO & MEXICO.**—Application will soon be made by a company under this name for a charter to build about 500 miles of railroad; a main line from San Antonio, Texas, south to Brazos Santiago, near the mouth of the Rio Grande river, 200 miles, a branch from a point north of Pleasanton, Atascosa county, west via Eagle Pass to Del Rio, 170 miles, and a branch from near Oakville, east through Bee and Refugio counties to San Antonio Bay, 80 miles. A branch is also projected through the northern part of Nueces county to Aransas Pass, 50 miles. Surveys are to begin at once. The incorporators include: Colonel Uriah Lott, of San Antonio; D. J. Woodward, J. J. Stevens, G. W. West and J. E. Jarratt.

**SHAMOKIN & EDGEWOOD (ELECTRIC).**—This company has been granted permission to build about 53 miles of extensions, including a line west to Sunbury, 18 miles; also through Irish Valley, 15 miles, and from Paxinos to Seven Points, 10 miles.

**SOUTHERN PACIFIC.**—The Inter-California, projected from Cal-exico, Cal., near the international boundary southeast through Mexico, thence northeast across the boundary near the Colorado river to a connection with the Southern Pacific near Yuma, Ariz., of which 15 miles was built last year, will shortly be put in operation from Cal-exico south to Paradones, 37½ miles. (Mar. 12, p. 392.)

**TEXAS ROADS.**—The official statement recently issued by the Texas Railroad Commission for the fiscal year ended June 30, 1907, gives the total mileage of track as 15,482 miles, consisting of 12,575 miles of main line and 2,907 miles of sidings. During the year 517 miles of main track and 314 miles of side track were added. Of this the following companies added new mileage: Abilene & Northern, 38 miles; Beaumont & Great Northern, 20; Burrs Ferry, Brownell & Chester, 7; Caro Northern, 16; Houston Belt & Terminal, 8; Wichita Falls & Northwestern, 16; Wichita Valley, 60; Galveston, Harrisburg & San Antonio, 26; Houston & Texas Central, 94; Pecos & Northern Texas, 57; Texas Central, 41, and Trinity & Brazos Valley, 144. The statement does not include the logging roads, of which there are a large number, having an aggregate length of more than 1,000 miles.

A project is being promoted by James W. Swain, of Fort Worth, Tex., to build a line about 400 miles long from Fort Worth, Tex., west to Roswell, N. Mex.

**TEXAS ROADS (ELECTRIC).**—Contract is reported let to the Suderman-Dolson Company, of Houston, to build an electric line from Fort Worth, Tex., to Mineral Wells, about 50 miles. Work is now under way. C. M. Davis, Chief Engineer.

Contract is also reported let to the American Engineering Company, of Indianapolis, for building an electric line from Fort Worth west to Mineral Wells by a different route.

Rights of way, it is said, have been secured and financial arrangements are being made by Dr. T. M. Barnes, of Fort Worth, for building an electric line from Waco, Tex., southeast to Marlin, 25 miles, thence southwest to Temple, 30 miles.

**WACO, HAMILTON & BROWNWOOD.**—It is said that financial arrangements have been made by this company and contracts will shortly be let for building its proposed line from Waco, Tex., west to Brownwood, about 120 miles. Stephen Turner, Chief Engineer. (Oct. 4, p. 403.)

**WESTERN ILLINOIS TRACTION.**—Incorporated in Illinois with \$100,000 capital and office in Chicago. The company proposes to build an electric line from Lyons, Cook county, west through Du Page and Kane counties to Aurora, 30 miles. The incorporators include: M. M. Miller, L. Michael, L. Crollin, E. J. Schmidt and W. Klein.

**WISCONSIN CENTRAL.**—A franchise, it is said, has been granted this company to enter the city of Duluth, Minn., and a contract has been made with the Northern Pacific to use its bridge over the St. Louis river. (Sept. 23, p. 372.)

**WISCONSIN ROADS (ELECTRIC).**—Contract is reported let to the Milwaukee Construction Co. for building an electric line from Fond du Lac, Wis., north along the east shore of Lake Winnebago, connecting with the Knox Transportation Company either at Appleton or Kaukauna, about 50 miles. The promoter's names are not given.

#### RAILROAD CORPORATION NEWS.

**BLOOMINGTON, PONTIAC & JOLIET ELECTRIC.**—Control of this company has been bought by interests in control of the Joliet, Plainfield & Aurora. The Bloomington, Pontiac & Joliet Electric has 20 miles of road in operation from Pontiac, Ill., to Dwight, and it is understood that the extensions to Bloomington and to Joliet

will be completed. The Joliet, Plainfield & Aurora runs from Joliet, Ill., to Aurora, 20 miles, and is the connecting link between the Chicago & Joliet Electric and the Aurora, Elgin & Chicago. It is owned and operated by the Joliet & Southern Traction Company.

**CENTRAL OF GEORGIA.**—Oakleigh Thorne, President of the Trust Company of America, New York, has sold his share in the stock of the Central of Georgia. Mr. Thorne and Marsden J. Perry bought all the stock of the road last June. (June 28, p. 949.)

**CLEVELAND & PITTSBURGH.**—The New York Stock Exchange has been asked to list \$796,250 additional special guaranteed betterment stock, making the total listed \$8,274,050.

**EVANSVILLE & TERRE HAUTE.**—Results of operation for the year ended June 30, 1907, are given in the following table. The company is to spend \$183,000 on a passenger station and the improvement of freight terminals at Evansville, Ind.

	1906-'07.	1905-'06.	Change.
Average miles operated .....	310	310	
Freight earnings .....	\$1,586,742	\$1,489,423	Inc. \$97,319
Passenger earnings .....	587,885	585,219	" 2,667
Mail earnings .....	54,487	53,788	" 699
Express earnings .....	36,464	33,511	" 2,953
Miscellaneous earnings .....	1,637	1,740	Dec. 104
Gross earnings .....	\$2,267,215	\$2,163,681	Inc. \$103,535
Maintenance way and structures .....	\$280,144	\$226,477	Inc. \$53,667
Maintenance of equipment .....	403,082	308,496	" 94,585
Conducting transportation .....	386,076	495,538	Dec. 109,462
General expenses .....	74,308	80,906	" 6,599
Operating expenses .....	\$1,143,609	\$1,111,418	Inc. \$32,192
Net earnings .....	\$1,123,606	\$1,052,263	Inc. \$71,343
Other income .....	25,514	24,612	" 902
Total income .....	\$1,149,120	\$1,076,875	Inc. \$72,245
Taxes .....	\$103,278	\$92,284	Inc. \$10,993
Interest and rentals .....	580,622	550,281	" 30,341
Net income .....	\$465,221	\$434,310	Inc. \$30,911
Dividends .....	223,662	223,662	
Addns., improvcmnts, betterments .....	.....	42,921	Dec. 42,921
Year's surplus .....	\$241,559	\$167,727	Inc. \$73,832

**ILLINOIS CENTRAL.**—At the annual meeting called last week, the counting of proxies was stopped when it became evident that Stuyvesant Fish had more than the Harriman interests. According to the provisions of the temporary injunction, the meeting was accordingly adjourned to December 18 to allow time to decide the question as to whether the 286,731 shares owned by the Union Pacific, the Railroad Securities Company and the Mutual Life Insurance Company may be voted by the Harriman interests. It is said that, of the remaining stock, Mr. Fish controlled 40,000 shares more than the Harriman interests. (Oct. 18, p. 474.)

**JOLIET & SOUTHERN TRACTION COMPANY.**—See Bloomington, Pontiac & Joliet Electric.

**JOLIET, PLAINFIELD & AURORA (ELECTRIC).**—See Bloomington, Pontiac & Joliet Electric.

**KANSAS CITY SOUTHERN.**—Results of operation for the three months ended September 30 were as follows:

	1907.	Change.
Gross earnings .....	\$2,654,690	Inc. \$604,806
Operating expenses .....	1,633,065	" 308,128
Net earnings .....	\$1,021,625	Inc. \$296,678
Taxes .....	55,327	" 7,215
Net earnings, taxes deducted .....	\$966,298	Inc. \$289,463

**LEHIGH VALLEY.**—This company has sold to Brown Bros. & Co., New York, the First National Bank, New York, and Drexel & Co., Philadelphia, \$2,000,000 4½ per cent. car trust notes, maturing in 20 equal semi-annual instalments up to and including September 1, 1917. They are secured on steel frame box cars, gondolas and steel coal cars.

**MCCLOUD RIVER.**—This company has made a new first mortgage to the Mercantile Company, San Francisco, as Trustee, securing an issue of \$1,200,000 5 per cent. 30-year bonds. The old bonds, amounting to \$316,000, have been retired. The road runs from Sisson, Cal., on the Southern Pacific, to McCloud and other points, 50 miles in all.

**PERE MARQUETTE.**—Judson Harmon, Receiver, and W. W. Crapo, of the stockholders' protective committee, are to act as arbitrators to complete the reorganization of this company. The plan has been approved by Judge Horace Lurton in the Federal Court, and it is expected that the receivership will be terminated within a month.

**WRIGHTSVILLE & TENNILE.**—The Georgia Railroad Commission has given this company permission to issue \$250,000 bonds secured on its 105 miles of road. The proceeds are to be spent for betterments, mostly on the Dublin & Southwestern, a 31-mile subsidiary. (Aug. 1, p. 138.)